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April, 1947

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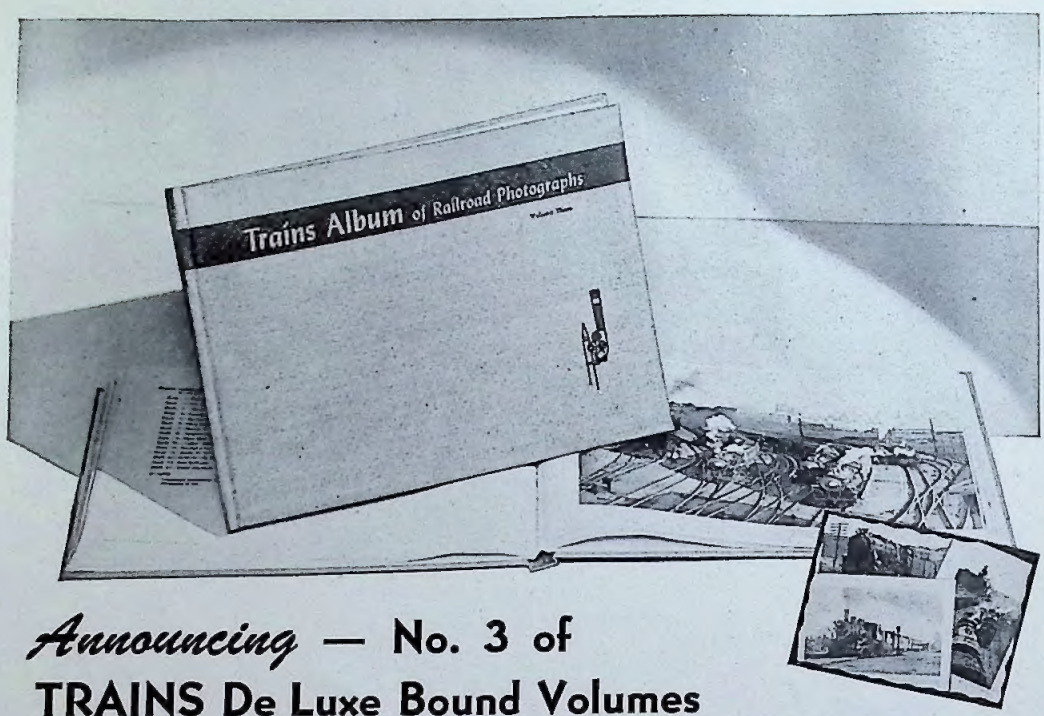

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Volume 7, Number 6

April 1947

"From the standpoint of national security, the readiness of the railroads is equal in importance to the readiness of the Navy." — Vice - Admiral Louis Denfield.

"It is indeed fortunate that the rail system of the United States was built for expansion of the commerce and industry of the nation. So far as present-day rail operations are concerned, the Army needs the railroads of this country just as vitally as any huge business of comparable size and complexity." — Brigadier General Paul F. Yount.

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New N&W engine terminal at Williamson, W. Va.

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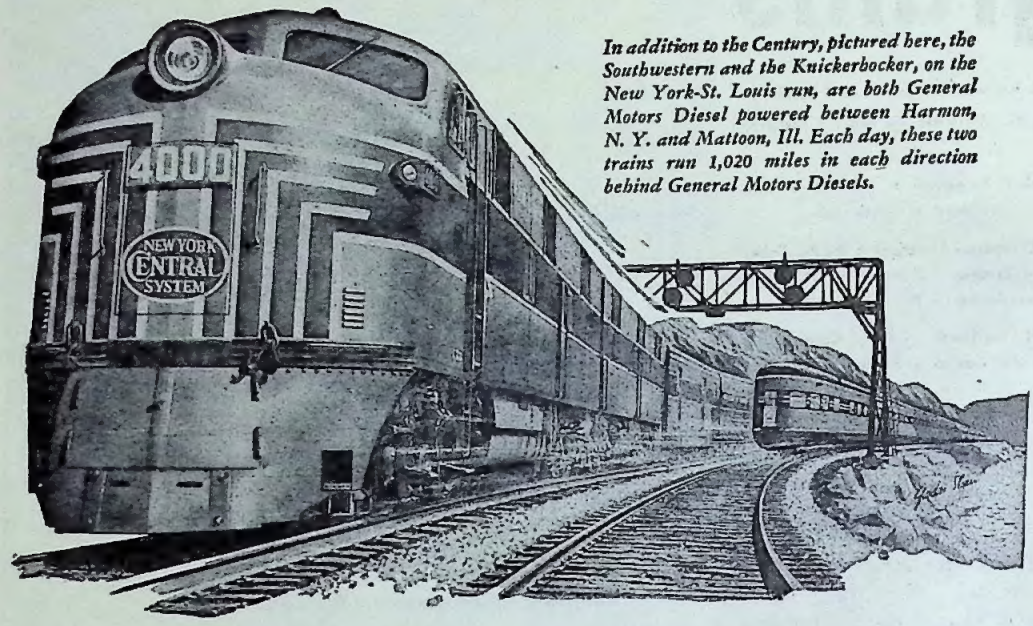

In addition to the Century, pictured here, the Southwestern and the Knickerbocker, on the New York-St. Louis run, are both General Motors Diesel powered between Harmon, N. Y. and Mattoon, Ill. Each day, these two trains run 1,020 miles in each direction behind General Motors Diesels.

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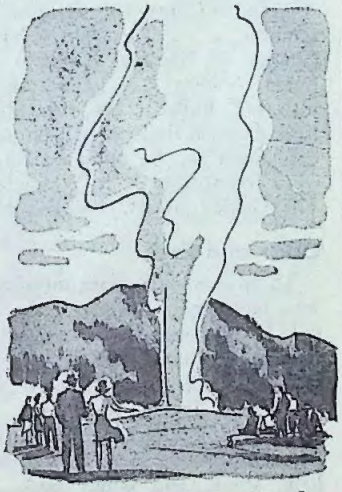

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Northwest Passage, 1947 Version

The Milwaukee Road, held up in inaugural date of its new transcontinental *Olympian Hiawathas* by the all-room sleeping cars which are being built by Pullman-Standard, has decided to start running the new trains about June 1 with standard all-room sleepers and the other new streamlined equipment which is now nearing completion in the road's Milwaukee shops, thus getting into the competition for summer season travel alongside the new streamlined *Empire Builder* of the Great Northern. The standard room cars will then be replaced by the streamlined cars as soon as they are delivered.

The Fairbanks-Morse 6000-horsepower Diesel locomotives destined for the new coast train have been in service for several weeks, working first on Chicago-Minneapolis runs and then farther out West. Thus enginemen will be familiar with the new power by the time the *Olympian Hiawathas* go into service. Cars for the service are unusual in exterior appearance as well as interior appointments. Color scheme is traditional Milwaukee Road orange and maroon, but instead of broad maroon stripe at window level, the central grouping of windows in each car is encased in a maroon block and end portions of the car are orange at window level, thus giving each car an identity. The rear end of the observation car, which will be one level, will have a sky-view roof, albeit strongly braced, which will not only serve as a vivid identification feature of the train, but will give passengers in the lounge a full view of scenery both at and above track level.

Agitation for streamlined service to Seattle started with the *Seattle Post-Intelligencer*, spurred on by the *City of Portland* streamliner service over Union Pacific to the rival city down on the Willamette. Seattle had a strong and honest civic gripe for a decade while the rest of the West Coast enjoyed two-night service to Chicago and all three of the northern routes continued with their standard three-night Chicago-Seattle trains. But the situation was not too easily resolved. Travel between the Pacific Northwest and Chicago was far from as heavy as between California and Chicago. Further, it was well divided among three roads, Great Northern, Milwaukee, and Northern Pacific. Some even went via Portland and the Union Pacific, particularly after the *City of Portland* started running on June 1, 1935. Except during vacation season there often were not enough through passengers to justify one transcontinental train, let alone three.

It was another case of which came first, the chicken or the egg. The *Post-Intelligencer* contended with much force that streamliners on the northern routes would generate much business which was not already existing in any form and would also shift additional business from competitive transport. There was talk of an every-third-day alternating service on the three roads to give joint daily service, but the difficulty was that the existing business which kept the trains going was largely in-between rather than through travel, and an alternating service would leave many a city without a fast train two days out of three. The Chicago-Florida run, where every third day service has been used so successfully, was hardly an example since the Florida travel is almost entirely through. The *Post-Intelligencer* offered its own plan of a joint through route, using the best portions of each railroad for a single daily streamliner.

Then came Pearl Harbor. The situation rested until November, 1944, when Great Northern surprised the field with an announcement of a streamlined two-night *Empire Builder* as soon as new equipment could be had. Indeed, the new *Empire Builder*, which went into service February 23, was the first new sleeping car train since war's end. The Milwaukee was still in receivership in 1944 and because of the impending return to corporate management did not wish to commit a future management to far-reaching plans. But it was a foregone conclusion that neither Milwaukee nor Northern Pacific would let the Northwest business go by default. Even Union Pacific stepped its Portland streamliner up to a daily, with Seattle connection. Northern Pacific's new equipment has been arriving gradually, and its new trains will likely be in service later this year.

As the only large railroad now building passenger cars in its own shops, Milwaukee had somewhat the edge on the other roads. But it was held up by the same supplier delays as anyone else, and it could not economically undertake the construction of all-room sleeping cars which are a specialized job for a large-scale producer like Pullman-Standard. So for the luxury end of the train it had to stand in an already crowded line. It may still be standing in line this summer, but at least the new *Olympian Hiawatha* will be running on fast schedule and with new luxury features. Soon the northern transcontinentals will know whether there is really enough potential business to justify the new trains.

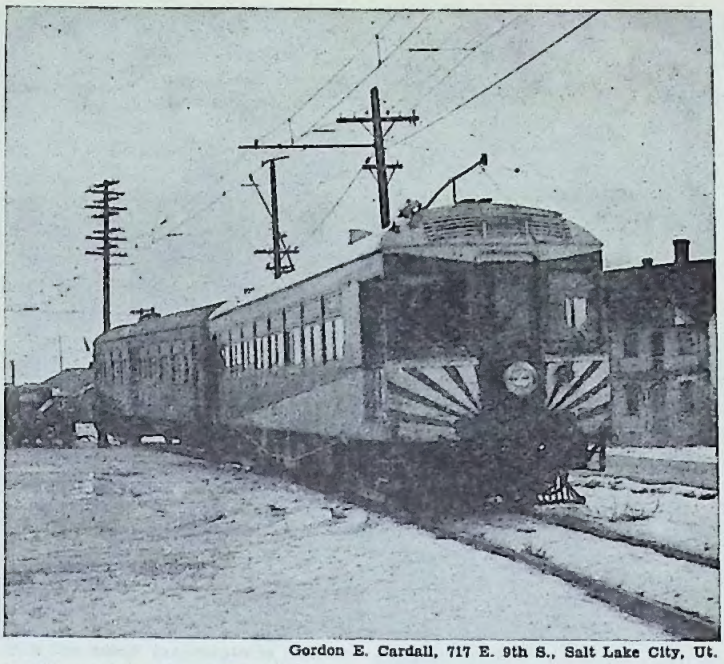
Railroad Reading Matter

Esquire Magazine went railroady in a big way recently. The March issue featured an article on the Rio Grande-Santa Fe Royal Gorge War, and the April issue features an article and 1½-page painting on Death Valley Scotty's famous record run of 1905 from Los Angeles to Chicago in 44 hours 54 minutes. . . . The North Jersey Chapter of National Railway Historical Society has issued an illustrated bulletin on the Shore Line Electric Railway of Connecticut which can be obtained for 25 cents (coin) from R. S. Wendeling, 115 Oakley Street, Roselle, N. J.

Odds and Ends

Three feed and grain merchants who have been patrons of the 14-mile Middletown & Unionville Railroad, which links the Erie and Susquehanna railroads across the New York-New Jersey state line, no longer grumble at freight bills. The three customers bought the line, lock, stock, and water tank, for $22,000 at an auction.

The huge train shed of the Pennsylvania Railroad's Pittsburgh station will be gone by fall, part of a station modernization program which also includes alterations to



Gordon E. Cardall, 717 E. 9th S., Salt Lake City, Ut.

Another electric railroad to cease operations is Utah-Idaho Central out of Ogden. Typical passenger train with express trailer is shown few days before last run.

the head house and easing of the sharp "Fort Wayne" curve over Liberty Avenue. Temporary roofs are being erected over the platforms so derricks can remove the steelwork while the station tracks continue to load hundreds of trains daily. . . . The Southern Railway System has started an employee magazine, *Ties*. . . . The Shore Fast Line, electric railroad between Ocean City and Atlantic City, N. J., will be abandoned and service taken over by buses. This road was originally built as narrow gauge.

For a small service charge Texas & Pacific rents portable radios to Pullman passengers on its *Sunshine Special* and *Southerner* between Fort Worth and El Paso. . . . Following a long controversy, the Chamber of Commerce of Lenoir, N. C., voted not to oppose discontinuance of passenger service on the Carolina & Northwestern. The issue was argued largely on the basis that discontinuance of a losing passenger train would enable the road to improve the freight service. . . . The CB&Q has sold its interest in the bus business, Burlington Trailways. . . . The Erie laid a special siding, known locally as the Cyclotron & Southern, into the University of Rochester campus to deliver the huge forgings for the University's new atom smasher. One forging weighed 157 tons.

The winding Rapid City, Black Hills & Western has applied for permission to abandon its entire 33.5 mile line. . . . Tonopah & Goldfield received permission from I. C. C. to abandon operations in interstate commerce, but Nevada Public Service Commission has refused it permission to abandon in intrastate commerce. Meanwhile, with no such split opinion, near-by Nevada Copper Belt Railway ceased operations March 24. . . . California railroads are endeavoring to secure repeal of the state's full-crew law, contending that it was passed in 1911 before improvements in braking, motive power, and equipment made it safer to handle trains with less men. California's law is more strict than those of 13 other states with full-crew laws. . . . Eagle Scouts of Dallas County were invited by Texas & Pacific to tour the road's engine and car shops and other facilities in Marshall, Tex.

Railfan Trips

[Notices must be received by the 10th of the month for inclusion in following month's issue.]

April 13: Pennsylvania Railroad off-the-beaten-path trip over the branches and freight cutoffs of Philadelphia area, leaving Broad Street Station 10 a. m. Fare $3.75. Write National Railway Historical Society, Henry Dickinson Jr., 109 W. Ashland Avenue, Glen Olden, Pa.

April 20: Los Angeles Transit Lines, comparison of equipment. Railroad Boosters, A. Wayne Melching, 804½ W. 85th Street, Los Angeles 44, Calif.

April 20: Erie branch lines and old original main line to Piermont. Fare $3.25 if sent before April 14 to Joint Railfan Trip Committee, Inc., Lackawanna Terminal, Hoboken, N. J.

April 27: Boston & Maine to Portland, Rigby, and other points. Leave North Station 9 a. m. Fare $4.45 in advance to Cyrus Hosmer Jr., Railroad Enthusiasts New England Division, 34 Chester Road, Belmont 78, Mass.

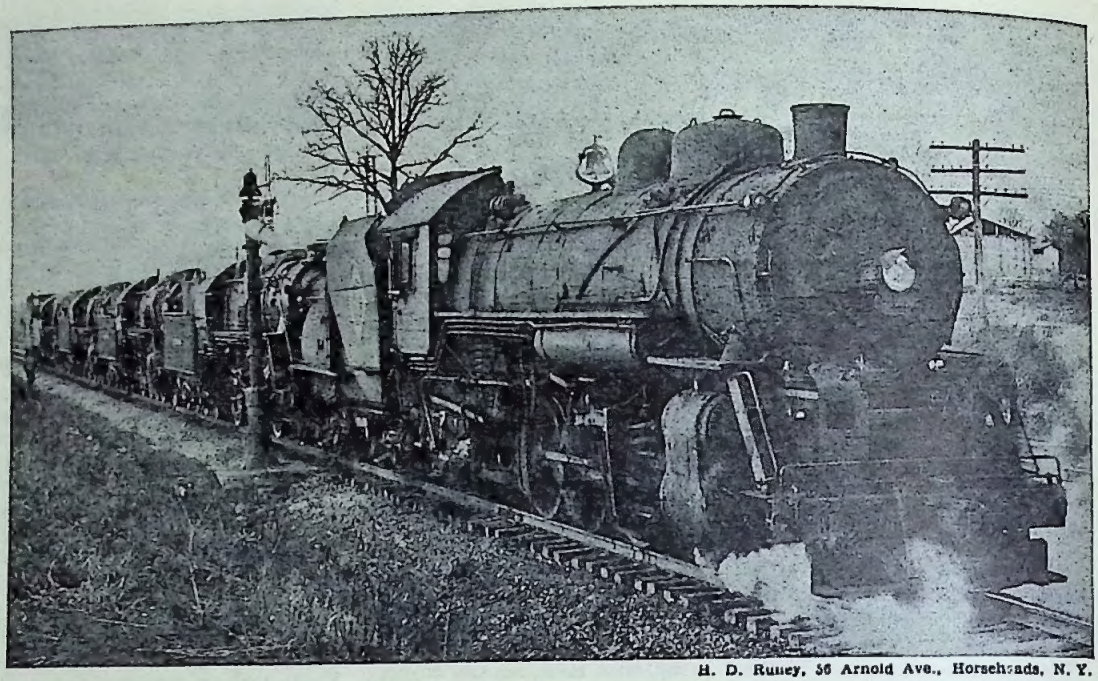
May 3: Santa Fe San Joaquin Valley branch lines. Write J. M. Ferris, Railroad Boosters, Box 5279 Metropolitan Station, Los Angeles 55, Calif.

May 4: New Haven freight line from New Haven to Maybrook, N. Y., over Poughkeepsie bridge. Leave New Haven 9:15 a. m. Streamlined equipment and 1400 engine. Fare $5.75 from New Haven, $3.75 from Danbury. Send before April 25 to Edward G. Kelly, National Railway Historical Society, 411 Shelton Avenue, New Haven 11, Conn.

May 18: Boston Elevated and Massachusetts Street Railway. Leaves Arborway Station of Elevated 1:30 p. m. Write William V. Kenney, Boston Chapter National Railway Historical Society, 90 Walworth Street, Roslindale 31, Mass.

Foreign Notes

The Mont Cenis tunnel under the French Alps has been reopened and through trains are again running between Paris, Turin, and Rome on schedules as fast as in 1939. The well-known *Blue Train* between Calais and Nice and Vintimille, with through cars to Milan and Rome, has been re-established. Service from Paris to Belgium and Holland has been improved, with nonstop runs between Paris and Brussels, 194 miles. A section of the *Nord Express* is now running through from Paris to Stockholm in six hours less than last July. For the first time since 1939 schedules



H. D. Runey, 56 Arnold Ave., Horseheads, N. Y.

One live Erie locomotive pulls four dead Chinese U. N. R. R. A. locos from Lima Locomotive Works for overseas shipment.

appear for Paris-Berlin service, and daily trains are again running between Paris and Vienna, Belgrade, Prague, and Warsaw.

Prefabricated railway stations, readily portable and easily erected, are being tested on British railways. . . . The London & North Eastern has augmented its London to Hook-of-Holland service to daily except Sunday operation. . . . New through sleeping cars are running between London and the Riviera. . . . London, Midland & Scottish passenger service has been restored to 88 per cent of its prewar mileage, schedules have been speeded up, and dining cars have just recently been restored on 100 trains. Since the end of the war more than 500 new passenger cars of all types have been put in service, including 200 out of 800 projected new third-class corridor coaches. . . . Cecil J. Allen, famed British writer on railway subjects, has retired from the Chief Engineer's Department of the LNER. He has contributed 407 regular articles, every issue since 1909, to the British *Railway Magazine*, under the topic "British Locomotive Practice and Performance."

Norwegian State Railways has announced a $50 million 15 year modernization plan, including extension of main line in the far North, electrification of additional lines, and a cutoff saving 27 miles on the Oslo-Bergen route. . . . The Budd Company will build 63 modern stainless steel cars, including coaches, diners, baggage mail, lounge, observation, and bedroom sleepers, for the Central of Brazil. They will be air conditioned and equipped with fluorescent lighting. . . . The agreement for standardization of rail gauges in South Australia, New South Wales, and Victoria will soon be signed by the three states. . . . The Nogent-sur-Marne viaduct, carrying principal trains from Paris to the east of France and to Switzerland, has been rebuilt and is now in use. The Germans wrecked the half-mile viaduct August 24, 1944, in their retreat and it was perhaps the severest blow struck at the French National Railroads. Temporary repair was impossible and until the new structure was finished trains were rerouted.

New Trains

The *Mountaineer*, fast summer transcontinental train from Chicago to Vancouver through the Canadian Rockies, will be restored June 28 after a five-year lapse due to the war. It runs out of Chicago on C&NW, from St. Paul to the border on Soo Line, and then on Canadian Pacific. Schedules have been timed for daylight passage through the most spectacular portions of the Rockies. . . . Monon is now running its time freight No. 71 from Hammond (Chicago Yard) to Louisville, 305 miles, in 9 hours, faster than the passenger schedule of only a year ago. . . . Santa Fe is planning a new through train, to be called the *Texas Chief*, for the Chicago-Houston run. It will be inaugurated when enough new streamlined equipment has been delivered.

The Illinois Central's first postwar streamliner, the *Land O'Corn*, is now in service between Chicago and Waterloo, Ia. It consists of coaches and diner-lounge built by Pullman-Standard and motive power by Electro-Motive. One of Illinois Central's prewar streamliner experiments was a two-car direct-drive oil-engine unit used on this same run under the same name, but it drew so much traffic that it soon had to be replaced by a standard train with more capacity. . . . New equipment is going into service on Northern Pacific's *North Coast Limited* as delivered, although the complete new Chicago-Seattle trains will not be introduced

until summer. New coaches and lounge-buffet cars for coach passengers are now running on the trains. . . . The new Rock Island-Southern Pacific tri-weekly extra-fare streamliner between Chicago and Los Angeles will be called the *Golden Rocket*. Cars are now under construction at Pullman-Standard, and service will start next summer. The train will be able to take advantage of Rock Island's multi-million dollar line improvement program between Chicago and Kansas City, where curves have been eliminated, grades eased, and bridges replaced to permit cruising speeds of 90 miles per hour.

Equipment Notes

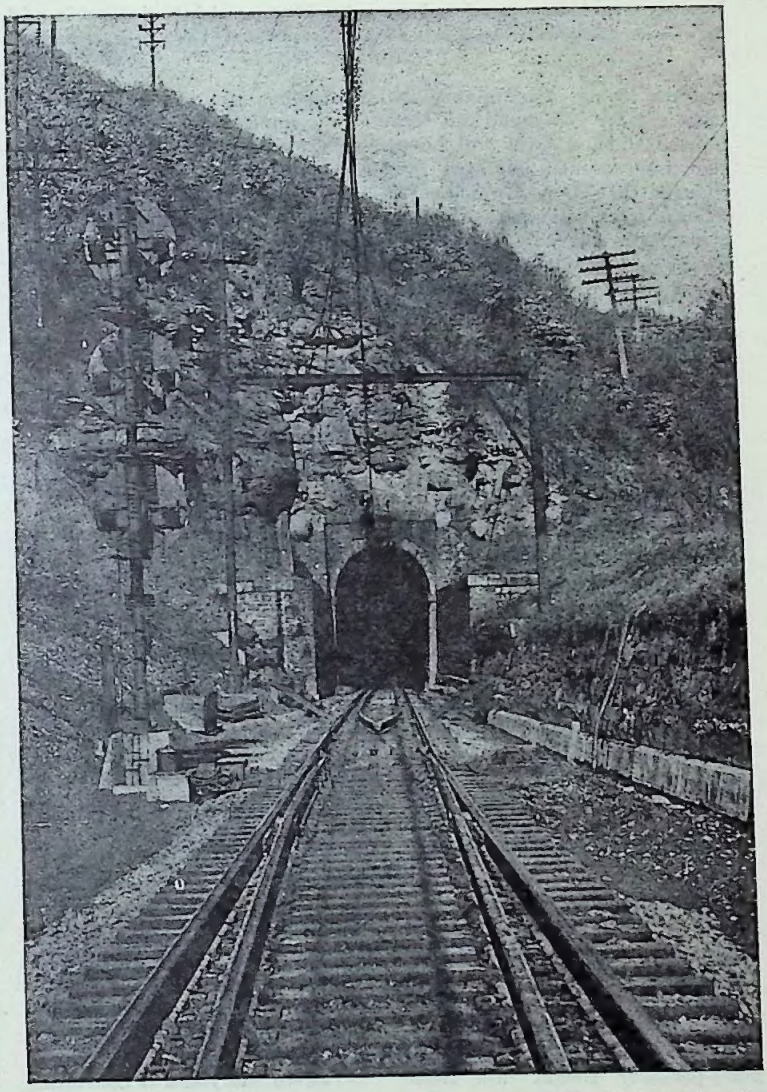
The first of 47 new sleeping cars for the streamlined *Sunshine Eagle* of Texas & Pacific-Missouri Pacific was laid down recently at Pullman-Standard's Chicago works. . . . Illinois Central has ordered 1000 hopper cars for late fall delivery. Another 450 hoppers are being built at the road's Centralia, Ill., shops, and will be followed in the shops by 1000 box and 500 automobile cars. . . . Chesapeake & Ohio has ordered 18 streamlined baggage-mail cars from Pullman-Standard for handling of R. P. O. service on its new streamlined passenger service. Other head-end traffic will be diverted to special express and mail trains so that passenger schedules can be speeded up.

Norfolk & Western has ordered 20 streamlined sleeping cars from the Budd Company. Delivery is expected in the first quarter of 1948 and the cars will be immediately put in service on the road's through trains. Color scheme will be traditional N&W tuscan red with gold trim. . . . The Canadian National has ordered 500 40-foot box cars of unusually large cubic capacity and with large doors to make them suitable for a wider variety of loads. . . . Wabash has ordered 500 40'-6" box cars, DT&I 200 of the same, and W&LE 250 50-ton box cars, all from A. C. F.

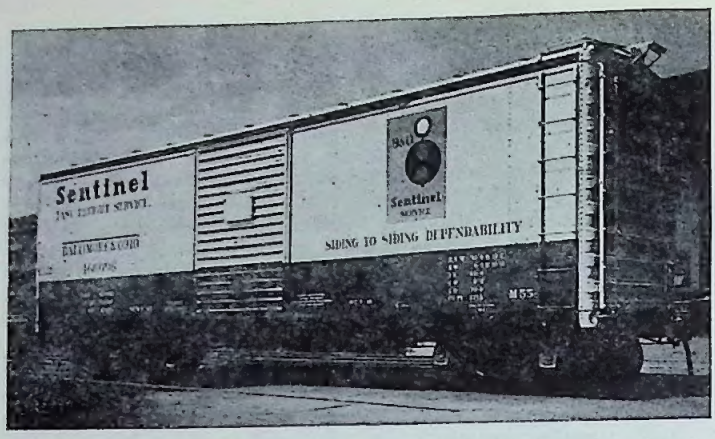
Milwaukee Road roadway and equipment budget for 1947 is $48 million, including $31½ million for new locomotives and cars. Locomotives listed are four 6000 horsepower Diesels for the *Olympian Hiawatha*, four 2000 horsepower passenger units, five 1000 horsepower switchers, and 11 1500 horsepower road switchers. Passenger train cars include baggage, mail, express, coaches, diners, lounge, and sleeping cars, all of which will be assigned to the new transcontinental trains. The road is building all the new passenger cars except all-room sleepers in its Milwaukee shops, and 3419 freight cars will also be built in the shops. The program includes a new passenger car erecting shop at Milwaukee, additional freight yard trackage at Chicago, Milwaukee, St. Paul and elsewhere, $6.4 million for track improvements, and $2½ million for replacing, renewing, and strengthening bridges.

Budd Company passenger car developments include a new type "cabin" sleeping car in which the passenger can lower his own premade bed without stepping into the corridor. Twenty-two of these private rooms can be built into one car. Another Budd development is an individual radio speaker installed behind cushioned upholstery at ear level in the back of the reclining coach seat. . . . The track and drum brakes on P. C. C. noiseless street cars have been still further improved to give this modern vehicle an even higher schedule speed and safety.

Maintenance and improvement budget of the Chicago & North Western for 1947 totals more than $106 million, and includes purchase of 21 Diesel-electric locomotives, 1400 box cars, 78 passenger cars,



Historic Elkhorn Tunnel will be eliminated in a major 5.27-mile line relocation which will reduce Norfolk & Western grades and curves near Bluefield, W. Va.



To advertise its new Sentinel freight service, in which carloads move under teletype supervision from siding to siding rather than just from terminal to terminal, B&O is putting a fleet of colorful box cars on the rails. Body of car is aluminum, lettering blue, bottom panel and top stripe blue, panel behind signal is gold. To give maximum advertising, cars will be loaded for off line whenever possible.

and the laying of more than 200 miles of new 112-pound rail. Centralized traffic control will be installed on the main line from West Chicago to Nelson, Ill. Some 216 miles of track will be reballasted in high-speed territory. A modern Diesel locomotive servicing and repair shop will be built in Chicago and a number of oil storage tanks will be installed at various points on the system to service both Diesels and oil-burning steam locomotives. Coal-burning operations will be improved by the construction of a 400-ton electrically operated reinforced concrete coaling plant at Clinton, Ia. The use of oscillating red safety lights will be broadened with the purchase of 196 for locomotives and 108 for rear end use.

Locomotive Notes

Chesapeake & Ohio has ordered from Lima Locomotive Works five 4-8-4 passenger locomotives and from Baldwin five 4-6-4 passenger locomotives with poppet valves. These, along with the five 4-6-4 streamliners being rebuilt from Pacifics and the three steam-turbine-electric locomotives now under construction, will be used in connection with the C&O's program to completely replace all mainline passenger equipment with streamliners. . . . The Monon has ordered one 3000-horsepower 100-miles-per-hour passenger locomotive and one 1500-horsepower 65-miles-per-hour freight unit from Electro-Motive and one 1500-horsepower road switcher from Alco as a further extension of its program to completely Dieselize the road.

Canadian National has ordered 48 Diesels so far this year, including its latest order for 28 units. All are switchers, and will release the heavier steam switching locomotives, such as Consolidations, for other service. CN built one of the earliest Diesels in 1925 and now has 79 units in service, 50 switchers and 29 motor cars. . . . The Monon is now operating a 1500-horsepower road switcher on its French Lick Springs branch to do local freight work during the day and pull the passenger run, restored last fall, during the night. . . . The Canadian National lines on Prince Edward Island will be converted from steam to Diesel propulsion both because of water shortage and to relieve the overloaded ferries of the locomotive coal shipments. . . . New York Central is now taking delivery of one of the largest Diesel orders ever placed by an Eastern railroad, 66 units. Twenty are 2000-horsepower passenger, 34 are 1500-horsepower freight, and 12 are 1500-horsepower dual service. Including these the NYC will have 88 Diesel units in road service and more than 250 in switching service. During the past five years NYC has also purchased 92 reciprocating steam locomotives and is now participating in the development of the experimental gas turbine.

Western Maryland is converting five small Pacifics to oil burners to avoid smoke in long tunnels. The project is minor and not indicative of a trend, although WM plans that these particular engines will protect important service if there is any further interruption to fuel coal supply. . . . *Business Week* reports that 10 Class 1 railroads have asked Electro-Motive to co-operate in studies of complete Dieselization of their lines. These are most likely medium-sized roads where savings from complete elimination of coal and water facilities bulk more importantly than on the large roads. Roads which are known to be looking toward Dieselization include Monon, Gulf, Mobile & Ohio, New York, Ontario & Western, Green Bay & Western, Duluth, South Shore & Atlantic, and others of similar size. The Susquehanna is already completely operated by internal combustion. It is far more likely that the very large roads would completely Dieselize certain divisions, as has been done on Santa Fe and Boston & Maine, leaving other divisions with steam power. Then, in the event of a depression, steam locomotives can be white leaded and Diesel runs extended into steam territory, thus keeping the expensive Diesels busy and using the less expensive steam power for the marginal service. It is pretty hard to conceive of a railroad putting a half-million-dollar Diesel in dead storage. . . . Virginia & Truckee will sell its historic Ten-Wheeler No. 25 in order to help finance purchase of a larger locomotive from Nevada Copper Belt.

The Pennsylvania Railroad direct drive steam turbine locomotive is back in road service after a series of exhaustive tests at Altoona test plant. It is now running between Chicago and Crestline and both the enginemen and the mechanical department think it is doing a marvelous job. . . . One of the most mixed up trains ever seen ran recently on the Youngstown & Southern just south of Youngstown, O. It was a freight pulled by two Y&S steeple cab electric locomotives, helped by a B&O Mikado on the front end and a Pennsylvania Railroad B-28 switcher as pusher.

The new Western Maryland 4-8-4's have boiler pressure of 255 pounds, grate area of 106.7 square feet, cylinders of 20½" x 32", 69 inch drivers, and 290,000 pounds on drivers. At present the remainder of the 12 are the only

On the Oregon Short Line

Up the long heavy grade out of Burnt River canyon near Pleasant Valley, Ore., works this Union Pacific freight. At the head end is a 2-8-8-0 type simple articulated which is assisted by a similar locomotive pushing at the rear. H. R. Griffiths, Box 1162, Boise, Ida., snapped this 64-car train groaning along at approximately 20 miles per hour. Along this route travel the *City of Portland* and the *Portland Rose* linking Chicago and Omaha with the Northwest via Union Pacific rails

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domestic reciprocating steam locomotives on order at the Eddystone Works. . . . The Barre & Chelsea is going Diesel and its first locomotive of this type is also making test runs on the neighboring and affiliated St. Johnsbury & Lake Champlain. The B&C main line is the one-time Montpelier & Wells River. . . . The Lackawanna is working two passenger Diesels on a daily round-trip schedule between Hoboken and Buffalo, one way each direction on the daytime *Lackawanna Limited* and the return trips on overnight trains. Schedules have been cut one hour westbound and 45 minutes eastbound. . . . The American Locomotive Company, which is changing its primary function from the custom building of steam power to the mass production of Diesel-electric locomotives, has reorganized its executive setup at the same time to give greater responsibility to younger men.

Missouri Pacific has replaced tender boosters on its 10 Santa Fe type 1720 series locomotives with a Franklin trailing truck machine which is more suited to the higher boiler pressures and speeds of today. . . . Erie has ordered nine Alco 6000 horsepower freight Diesels, 11 Alco Diesel switchers, 4 Baldwin Diesel switchers, and 10 Electro-Motive switchers. This raises to 82 the number of Diesels in service or on order for Erie, 25 of which are road locomotives. . . . N. C. Dezendorf, of Electro-Motive, predicts that all through passenger trains between Chicago and the coast will be Dieselized this year.

A Foreigner in Indiana

It is sometimes quite a shock to see a familiar railroad in strange country far from its main line. Riding the Big Four through Indiana somewhere between Kankakee, Ill., and Lafayette, I spotted a parallel railroad and almost immediately identified it by one of the mileposts as Milwaukee Road. When we came to an overpass bridge there indeed was a road name painted proudly across the plate girder, "The Milwaukee Road." For as many years as the Milwaukee has owned this former Chicago, Terre Haute & South Eastern Line down into Indiana I still find it hard to accept the idea that this northwestern transcontinental also runs southeast of Chicago.

It is likewise a bit startling to find a well-known train off its accustomed right of way. During the war, and even now in times of heavy traffic, Pennsylvania Railroad trains occasionally land in the north side of the Chicago Union Station, a train shed usually reserved for Milwaukee Road trains. It brings one up with a start, for instance, to see the *General* and Chicago-Milwaukee *Traveler* parked side by side, or the *Olympian* and the *Golden Triangle* about to depart in opposite directions from the same platform.

In the Railroad Headlight

A Pullman porter who runs on Illinois Central's *Panama Limited*, Chicago to New Orleans, is TRAINS "Railroad Man of the Month" for April. Porter M. (Major) D. Stith has been with the Pullman Company 33 continuous years; on the *Panama* four years.

Because of his outstanding service record he has been given assignments on private cars at various times during the past 27 years and has handled many prominent people, including Douglas Fairbanks Sr., Geraldine Farrar, and, on nine-week campaign junkets, Vice-Presidents Charles G. Dawes and Charles Curtis.

Porter Stith makes a point of recognizing passengers who are making the *Panama* trip for the first time, so he can point out some of the interesting sights. Crossing the Ohio River bridge at Cairo is one of the outstanding sights of the trip, he maintains, and another is the trestle across one end of Lake Pontchartrain just outside New Orleans.

Trains man of the month, M. D. Stith.

Passengers appreciate extra courtesy and attention, Stith has found. "I find out what people like, then give them that kind of service and they're always pleased," he says.

Stith lives at the Chicago end of the run, where he owns his home. As a hobby he does mechanical work in his basement workshop, taking care of all the repairs in his home. He also likes to work in his flower garden. In World War I he served as a mess sergeant and was overseas 18 months.

He is proudest of the fact that he was a porter on the *Panama Limited* when it made its first run in 1915. During his 33 years on Pullman cars his company record shows 27 letters of commendation for good service.

House Wreckers

One of the eastern trunk lines acquired an odd corner of property in building its line across central Ohio. On that property stood a house and the rental of this house, together with its maintenance, was always a sore spot for the division management. One day the assistant general manager of the road found a way to kill two birds with one stone. A group of employees wanted some lumber for building a camp building and the A. G. M. said, "Tear down that old house on our right of way down the line and you may have the lumber."

While he was riding over the line a couple of weeks later the A. G. M. was surprised to see the house still standing. He got off at the next town and taxied back to check the situation. The house next door had been torn down! With visions of a $100,000 damage suit flitting through his head he rushed to the office of the register of deeds and checked the ownership of the house which had been torn down. The owner was blissfully wintering down in Florida. A personal wire over the A. G. M.'s name offered the owner slightly above current market price for the house — as a site for a filling station. The offer was accepted by return telegram. By the time the owner got back from Florida the ex-house had passed into the ownership of the railroad without benefit of a damage suit.

A. C. Kalmbach.

Modern Power on the N&W

Coal road, through modern design and servicing of conventional locomotives, proves that steam power can be efficient

The Norfolk & Western Railway, serving the bituminous coal fields of southern West Virginia and southern Virginia, is naturally much interested in the welfare of the coal business. In the belief that the conventional type of coal-burning locomotive could be greatly improved and made equal in efficiency and economy of operation to other types of railroad locomotive, N&W embarked upon a modernization program in 1936, the results of which add support to the oft-asserted contention that the spectacular performance of Diesel locomotives comes from comparing them with obsolete steam equipment.

Most recent of N&W's steam locomotive designs is the Class J, a 4-8-4 used exclusively in passenger service. The first one rolled out of the company's Roanoke shops in October, 1941; 11 are now in service. Making extensive use of roller bearings and mechanical lubricators, these locomotives have turned in a remarkable record of reliability, with minimum servicing at terminals, long mileages between shoppings for general repairs, and low maintenance cost. They haul heavy tonnage passenger trains over heavy mountain grades at relatively high speeds. Although they represent only 14 per cent of the railroad's total passenger engine roster of 81, these 11 locomotives handle 50 per cent of the passenger car miles.

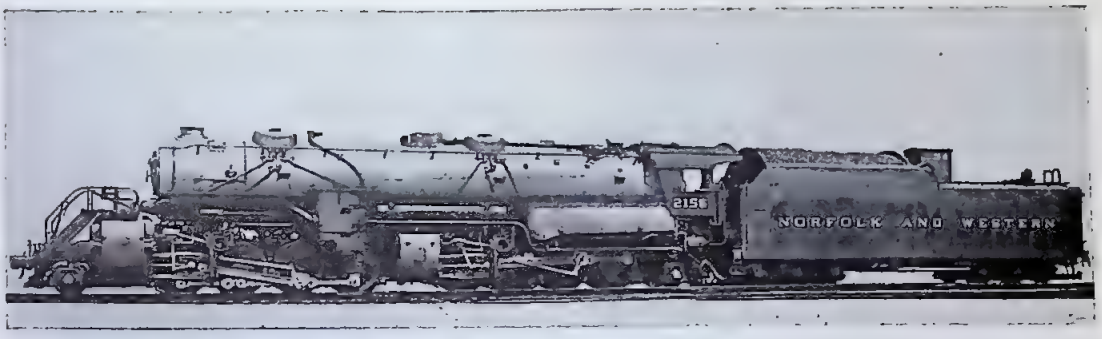
Running 500 miles a day in comparison with their predecessor 4-8-2 Class K's 250 miles per day, the Class J is maintained for slightly more than 13 cents a mile. The 25-year-old Class K costs about 16 cents a mile to maintain.

Factors largely responsible for the J's performance are boiler capacity, roller bearings, and mechanical lubrication. The boiler, originally designed for 275 pounds pressure and later raised to 300 pounds, has a combined heating surface of 7448 square feet and a grate area of 107.7 square feet. Sixty-six roller bearings are used. Mechanical lubricators supply 220 different points and carry sufficient oil to permit a run of 1300 miles. In addition, 72 points are fitted for pressure grease lubrication.

Other modern N&W steam locomotives are 35 single-expansion 2-6-6-4's of Class A, four

Principal Dimensions: Class J

Cylinder diameter and stroke, in.	27 x 32
Diameter of drivers, in.	70
Tractive force, lbs. (with booster)	85,800
Boiler pressure, lbs. per sq. in.	300
Total weight of engine, lbs.	494,000
Weight on drivers, lbs.	288,000
Weight on leading truck, lbs.	90,000
Weight on trailing truck, lbs.	116,000
Weight of engine and tender, lbs.	872,600
Grate area, sq. ft.	107.7
Evaporative heating surface, sq. ft.	5271
Superheater heating surface, sq. ft.	2177
Tender capacity: Tons of coal	26
Gallons of water	22,000



to 11 years old, and the 70 younger 2-8-8-2 compound Mallets of classes Y-5, Y-6, and Y-6a. These 105 engines, 31 per cent of the roster of 339 freight locomotives, handle 59 per cent of the gross ton-miles of all freight trains. All are equipped with roller bearings and mechanical lubricators as well as fittings for pressure grease lubrication. The Class A is used in freight and heavy passenger service and develops 6300 drawbar horsepower at 45 miles per hour. It is maintained for 21 cents a mile. The Y classes have a calculated tractive force of 126,000 pounds compound and 152,000 pounds simple, and haul tonnage trains at 45 to 50 miles per hour. Maintenance cost is about 23¾ cents a mile.

Contributing greatly to high utilization of these modern locomotives are two improved engine terminals which include "lubritoriums" specially designed to service the engines and get them back on the road in a hurry. These terminals are at Shaffers Crossing (Roanoke) and Williamson, W. Va. The Williamson terminal is the more recent and compact, being an improvement even on the improvements made at Shaffers Crossing in 1943. During the war emergency the Shaffers Crossing terminal was frequently called upon to handle half again as many locomotives as the 80 it was designed for

Principal Dimensions: Class Y-6a

Cylinder diameter and stroke, in.	25 and 39 x 32
Diameter of drivers, in.	57
Tractive force, lbs. . . simple, 152,206; compound, 126,838	
Boiler pressure, lbs. per sq. in.	300
Total weight of engine, lbs.	582,900
Weight on drivers, lbs.	522,850
Weight on leading truck, lbs.	32,200
Weight on trailing truck, lbs.	27,850
Weight of engine and tender, lbs.	961,500
Grate area, sq. ft.	106.2
Evaporative heating surface, sq. ft.	5656
Superheater heating surface, sq. ft.	1775
Tender capacity: Tons of coal	26
Gallons of water	22,000

Principal Dimensions: Class A

Cylinder diameter and stroke, in.	24 x 30
Diameter of drivers, in.	70
Tractive force, lbs.	114,000
Boiler pressure, lbs. per sq. in.	300
Total weight of engine, lbs.	573,000
Weight on drivers, lbs.	432,350
Weight on leading truck, lbs.	30,480
Weight on trailing truck, lbs.	110,170
Weight of engine and tender, lbs.	951,600
Grate area, sq. ft.	122
Evaporative heating surface, sq. ft.	6639
Superheater heating surface, sq. ft.	2703
Tender capacity: Tons of coal	26
Gallons of water	22,000

Although the improved facilities at Shaffers Crossing↑ were designed to care for 135 locomotives per day, as many as 141 have been serviced in that time. Locomotive enters the service building↘ at Williamson. Williamson office window↙.

All photos by courtesy of Norfolk & Western.

back in 1918. After rearranging and increasing some of the outside facilities and building two single-track inspection and lubrication buildings, servicing capacity was increased to 135 locomotives per day.

An assembly line layout was arranged so that an incoming locomotive would get, progressively, the various services needed to prepare it for the next trip in the shortest possible time. The two lubricating buildings were equipped with pressure grease and oil lines and an air line for use with hard-grease guns.

The Williamson improvement, made in 1946, includes a new three-track concrete engine-washing platform combined with hydraulic ash-handling facilities which will serve six tracks and four standpipes. Here the locomotives have their fires cleaned, are washed, the tenders are filled with water, boiler water is tested, and the boilers blown down if necessary. All these operations are performed with one spotting of the locomotive.

The new twin-track service building includes two inspection pits 135 feet in length. In this building the engines are inspected, lubricated, given minor running repairs and otherwise made ready for dispatching. Locomotives rarely enter the roundhouse except for periodic inspections. Indeed, in making the improvement it was found that an old 21-stall roundhouse with a 100-foot turntable, four bucket type ash hoists, four outdoor engine inspection pits, and other allied facilities could be retired. The clean, well-lighted and airy service building is equipped with pressure lubrication facilities which overlap so that a locomotive can be serviced at one spotting regardless of which way it is headed. No reverse movements are necessary.

This improvement cost the N&W about $300,000, but, although it has been in service only a short time, it has already proved its worth. The modern pressure lubrication system not only saves time in servicing the locomotives but actually is instrumental in preventing engine failure which might result from human failure to use the right lubricant at the right place. Fittings of the various pressure lines are so constructed that it is impossible for a lackadaisical employee to use engine oil where he should have used valve oil or some other different grade of lubricant.

The modern steam locomotive uses six different lubricants:

Valve oil, used in mechanical lubricators for lubricating valves, cylinders, slip joints, feedwater pump, air pump, stoker, parts subjected to steam, and split-housing roller bearings.

Engine oil, used in mechanical lubricators to lubricate driving box pedestal shoes and wedges, engine, trailing truck and tender pedestal shoes, crosshead guides, spring and brake rigging pins and bushings, reverse shaft bearings, radial buffers, truck lubricators, and other similar points.

Soft grease, used on various valve gear parts, wrist and knuckle pins, and friction wedges not equipped with mechanical lubrication.

Semifluid grease, used on roller bearings of the floating axle type.

Hard grease, used on driving rods.

Extreme pressure oil, used on side rods equipped with roller bearings.

In the lubritoriums, oils and soft greases are piped from storage directly to the locomotive, under pressure. A pressure air hose operates the hard-grease gun which uses stick grease. This gun is so geared that 100 pounds pressure in the air line delivers 17,000 pounds pressure at the engine bearing.

The Williamson lubritorium building is 60 feet wide by 165 feet long, of brick and concrete, with spacious glass block windows and interior walls of glazed brick. Lighting is provided by fluorescent tubes along two rows of reflectors on each side of the two inspection pits. The 16 lubrication stations receive oil pumped through

Beneath a battery of fluorescent lights, workmen service a locomotive in Williamson's twin-track glazed-brick lubritorium.

steam-heated pipe lines from the oil house, and grease pumped from shipping containers placed in a stainless steel cabinet in the service building itself.

Smoke from locomotives undergoing servicing is removed by special flat roof ventilators which extend practically the whole length of the building over each track. Supervisors and inspectors prepare their reports in a glazed brick office at the east end of the building. Their reports are dispatched to the roundhouse by means of a pneumatic tube.

The hydraulic ash-handling plant into which the engines dump their ashes as they are being washed is something new in locomotive servicing. The ashes fall into brick-lined concrete hoppers between the track rails, where they are washed by a continuous flow of water into a sluice trench. The water then sluices the ashes to a sump. A dredge type pump lifts the ashes to an overhead storage and dewatering bin which, when filled to its capacity, is dumped into cinder cars spotted below.

Williamson terminal handles engines of the Pocahontas and Scioto divisions. A locomotive from the Pocahontas Division pulls its train into the west yard, and is then moved eastward over the Pocahontas Division inbound track to the coaling and sanding station. Here it is refueled and the sand supply replenished. It then goes to the washing platform, where the fire is cleaned and ashes dumped while the tender is being filled with water, the engine washed and the boiler water tested and the boiler blown down. Now the locomotive is ready for the service building, where it is inspected, given minor repairs, and lubricated. From the service building it goes to the turntable for turning, then proceeds to the outbound track ready for service.

An engine from the Scioto Division proceeds in reverse direction. First it runs over this division's pull-in track south of the roundhouse and drops its train in the east yard. It is then moved over the inbound track to the turntable, where it is turned and headed over the outbound track into the service building. After inspection and lubrication it goes to the washing platform and from there proceeds to the coaling and sanding station. Ready for service, it proceeds to the west yard.

From the N&W's experience it becomes apparent that much of the vaunted superiority of the Diesel locomotive is chargeable to the modern methods of servicing which have been accorded this newer form of motive power. It has been suggested that steam locomotives might further be subjected to the streamlined methods of repairing Diesel locomotives. When an engine or other unit needs repair in a Diesel, the entire unit is replaced and the locomotive goes back into service while the original unit is repaired. It may never be used in the same locomotive again. Because the steam locomotive is a complete unit in itself, this is more difficult of accomplishment but nevertheless some parts could be interchanged. Boiler work is responsible for many of the out-of-service days a steam locomotive spends in the shops. The question has been asked, "Why not have spare boilers on hand to reduce this time?" But it has not yet been answered.

Constant striving to further increase the efficiency of the coal-fired steam locomotive and the methods of servicing it may yet result in an about-face in the apparent trend toward complete Dieselization of many railroads. Efficiently used, coal is still the cheapest fuel per B. T. U., and coal reserves are far greater than are reserves of oil. This may be the final deciding factor.

How to Use Optional Routes

Your trip can be made more interesting and more economical by taking advantage of railroads' special arrangements

BY WILLIAM FORSYTHE

Arrangements for ticket exchanges, side trips, and optional routing or honoring constitute one of the most important, yet least known, of all the railroads' efforts to attract passenger traffic. A large industrial firm, scattering its representatives over the country by rail, can well afford to study these arrangements, for their judicious use will save 10 to 15 per cent of transport costs, an item that can run into thousands of dollars annually. Individual travelers apparently prefer to buy their tickets the easiest way, regardless of cost and later inconvenience; but they could make their vacation trips infinitely more interesting by doing a little advance planning and making use of optional routes and side trips.

No matter what the destination, chances are that if it's 200 or 300 miles away you can add interest to your trip by an optional route or an honoring arrangement (giving choice of different routes over the same railroad), by a side trip or by exchange of ticket — any of which may be available for the asking or for a slight extra fare. Union Pacific, for instance, offers free, to round-trip passengers from Missouri River going to Granger, Wyo., or beyond, a side trip from Denver to Colorado Springs on Santa Fe, Colorado & Southern, or Denver & Rio Grande Western. Back in Denver after visiting Pike's Peak, the passenger may board the *Pony Express* and go on west via UP. Burlington Route, also serving Denver, makes the same offer. Rock Island reaches both Denver and Colorado Springs, and will take the passenger to either city. If he goes to Denver first, the side trip is free.

An "honoring arrangement" instructs conductors how to honor a ticket. If a given ticket is to be honored more than one way, all routes but the shortest or normal one are optional. The arrangement may call for carrying the passenger via an indirect line but always generally toward his destination, or it may involve a side trip that takes him off the direct route and then back to it at the same or a different junction. It may call for additional payment or it may be free; may apply only to round trip or to both round-trip and one-way tickets; may work with first-class and not with coach transportation. As we have just seen, it can even take the passenger off the line of one railroad and onto another.

An "exchange arrangement" sets forth a "which for what." It says a ticket (described) may be exchanged by a ticket agent (at a named place) for another ticket (also described). It, too, may be free, or obtainable only with additional payment. Whether it is to be granted or withheld is not left to the ticket agent's discretion. The statement is: "Tickets or coupons . . . *will* be exchanged. . . ."

A *side trip* is a round trip when it returns to the main line (or line of ticket's normal validity) at the same point at which it left that line. It may be on the railroad publishing it, or that road may buy it from another carrier.

A railroad with one main stem and no branches has only one way of carrying a passenger from one point to another; it needs no optional routes. With a branch, the situation may change, or it may not. But when the railroad expands into a system, and its map becomes a triangle, a diamond or rectangle, then these arrangements assume considerable importance.

Few railroads today consist of only one main stem with no branches. Little Green Bay & Western has branches, and so do Toledo, Peoria & Western, and Missouri & Arkansas. Single-line roads are typified by Ann Arbor, Mississippi Central, and Richmond, Fredericksburg & Potomac. Study of the map of any large carrier — Milwaukee Road, Santa Fe, Southern, Pennsylvania — will show how many ways each has of joining its larger terminals.

Location of lines, economy, or conditions

DSS&A passengers are saved a cold wait at Nestoria by an arrangement which adds 30 free miles to their branch line trip.

generally may dictate establishment of an arrangement; but most potent force behind the passenger rate man's deliberations, causing about 99 per cent of all arrangements, is plain old competition. As a result, there are literally thousands of separate arrangements, and they are found all over the continent.

While Pennsylvania Railroad's Washington dog-leg is termed an optional route, it's really a side trip; south of Baltimore, it's a round trip side trip. A ticket from Philadelphia or east, to Ohio cities or beyond, will be honored via Wilmington and Baltimore to Washington, thence Baltimore-York-Harrisburg and on west. This arrangement is unqualified; it applies to one-way and round-trip tickets of all classes, and it works in both directions. This is one of the oldest, and likely the nation's most-used and therefore most profitable optional route.

From Philadelphia it is 103 miles to Harrisburg via Lancaster. But merely by saying he wants to go that way, the passenger can travel 135 miles to Washington and another 123 miles from Washington to Harrisburg, on his way to the Midwest. He gets 155 miles free. Why should the "Standard Railroad of the World" give away so much transportation?

It must. Superiority of B&O's mainline location is evident. The cities of Wilmington, Baltimore, and Washington, on the B&O main line, are far more important than Harrisburg or Altoona, on the Pennsylvania. Pennsylvania reaches Wilmington and Baltimore and Washington, too, but not on its normal way to Pittsburgh and the Midwest. And B&O was never one to ignore its advantages; its older coaches still carry the stained-glass door emblem, "All Trains Via Washington." These considerations are far stronger now, when stopovers anywhere en route are permitted so generally, than in the past, when stopovers were exceptional.

Here are New York, Philadelphia, Wilmington, Baltimore, Washington. In house-that-Jack-built sequence, these are the cities that brought the railroads that made the cities' greatness that created the traffic. And that's the one single cause for any tariff publication: Traffic. Volume of demand is followed by effort to secure the business.

Looked at in this light, Pennsylvania Railroad isn't giving away any 155 miles of free transportation. It has the short route from Philadelphia to Pittsburgh. It just so happens that its competitive route, via the cities through which so many people want to travel, is 155 miles longer than its short route. Pennsylvania can either honor tickets via Washington or forego much of the business.

Thus, direct competition afforded by another railroad's line is responsible for most of the free side trips or indirect optional routes. A situation such as the one described is almost always in the background.

B&O will carry free, from North Vernon to Louisville and return, a passenger holding a St. Louis-Cincinnati ticket, because Louisville is on Louisville & Nashville's main line, St. Louis to Cincinnati. This is a round trip side trip. NYC's through service from St. Louis to New York is via Indianapolis, Muncie, and Cleveland; but to meet competition of both B&O and PRR it will honor such tickets via Indianapolis, Cincinnati, Dayton, and Columbus. This is both a triangle and a side trip.

Maybe the railroad has good train service one way, poor service another. Simple desire to make itself more useful to the public seems to have caused Great Northern's options be-

tween Fargo and Minot. Tickets will be honored via Grand Forks, via Mayville, via Aneta, or via New Rockford. Nickel Plate offers five routes between Fostoria and Frankfort. Chicago & North Western shows 10 different ways of handling passengers from Chicago-Milwaukee to St. Paul-Minneapolis and Duluth.

Burlington has five ways of carrying people from Galesburg to Kansas City; Milwaukee Road 14 between Chicago and Aberdeen. Southern Pacific will honor a Portland-San Francisco ticket via the old Siskiyou line or via its newer Klamath Falls route. Denver & Rio Grande Western offers either its Royal Gorge or Moffat Tunnel service to Colorado-Utah passengers. Northern Pacific tickets are good via Helena or via Butte. Five options are available to Jacksonville-Tampa passengers on Atlantic Coast Line. Louisville & Nashville offers its Cincinnati-Atlanta passengers their choice of three different routes.

Economy, desires of the traveling public, and simple humanity contributed to an arrangement of Duluth, South Shore & Atlantic Railway. This is published in a single-item entry; explaining it takes more room than the item itself. It states: Passengers from Sidnaw and west to L'Anse and north will be carried via Champion.

This east-west railroad joins Duluth with Sault Ste. Marie; a 60-mile branch to the copper country towns of Houghton and Calumet leaves the main line at Nestoria. L'Anse is 17 miles north of Nestoria, on the branch. Mainline points Sidnaw and Champion are 23 miles west and 15 miles east, respectively, of the Nestoria junction. L'Anse and Sidnaw appear in the item as minimum journey points.

No railroad competition exists to compel this arrangement that provides 30 miles of travel free. The tariff contains no explanation. Study of the railroad's map and schedules, and knowledge of the region, will enable understanding.

Eastbound night train No. 8 from Duluth, with coaches and a sleeper, reaches Nestoria at 5:35 a.m. and runs on to Champion, arriving at 6:15. Westbound train No. 9 leaves Champion five minutes later with coaches and Milwaukee Road's Chicago sleeper for Calumet, and turns north onto the branch at Nestoria at 6:55. Evening transfer is the same thing in reverse direction, with a schedule allowing no delay whatever at Champion. As the passenger must change from train 8 to train 9, or from train 10 to train 7 on the same day, he can transact no personal business at Champion; the same-day in-and-out restriction prevents rate beating.

The arrangement helps passengers. Anyone who has ever visited northern Michigan, especially in winter, will quickly answer which is preferable, riding in a warm, dry train, or waiting for it. Occupants of the eastbound sleeping car have half an hour more of sleep.

It helps the railroad, too. The slim traffic available to DSS&A suggests it must watch its pennies. Expenditures for station facilities and maintenance are thus reduced. It is a commendable arrangement.

Consider now how competition caused two great paralleling railroads to short-haul themselves by dividing their traffic midway. The roads are the Frisco and Katy, and the traffic is that between St. Louis and Texas.

St. Louis-San Francisco Railway (Frisco) joins St. Louis with Dallas and Fort Worth, called North Texas. Missouri-Kansas-Texas lines (Katy) run from St. Louis to North Texas and on beyond to Austin, San Antonio, Houston, and Galveston. Neither carrier alone can make any effective bid for St. Louis-Texas passenger traffic against the stiff competition of Missouri Pacific and its subsidiaries, Texas & Pacific and International-Great Northern. Missouri Pacific competition is unusually vigorous and compelling. No other southwestern carrier joins so many of the more important places, which means no other carrier can similarly gather into its mainline trains the amount of business offered by so many cities.

So Frisco alone is simply out of the running against MoPac; Katy by itself is impotent. But together, each giving up about half its haul, the two roads get some business. They're the two little fellows in a three-way battle royal, who co-operate against the big guy.

The tariff says a Frisco ticket will be honored via Katy, and that a Katy ticket will be honored via Frisco. In practice, Frisco handles whole trains (two daily, *Texas Special* and *Bluebonnet*) to Vinita, Okla., and Katy performs the balance of the trip with the same cars.

Because important Austin and San Antonio are directly beyond North Texas, Frisco-Katy competes with MoPac for traffic to those cities; their handicap is a 40-mile longer route. But to Houston and Galveston, they're up against a 200-mile distance differential, due to a Missouri Pacific cutoff that by-passes North Texas altogether, via Palestine. Therefore, as far as

St. Louis business is concerned, Houston and Galveston are local to Missouri Pacific.

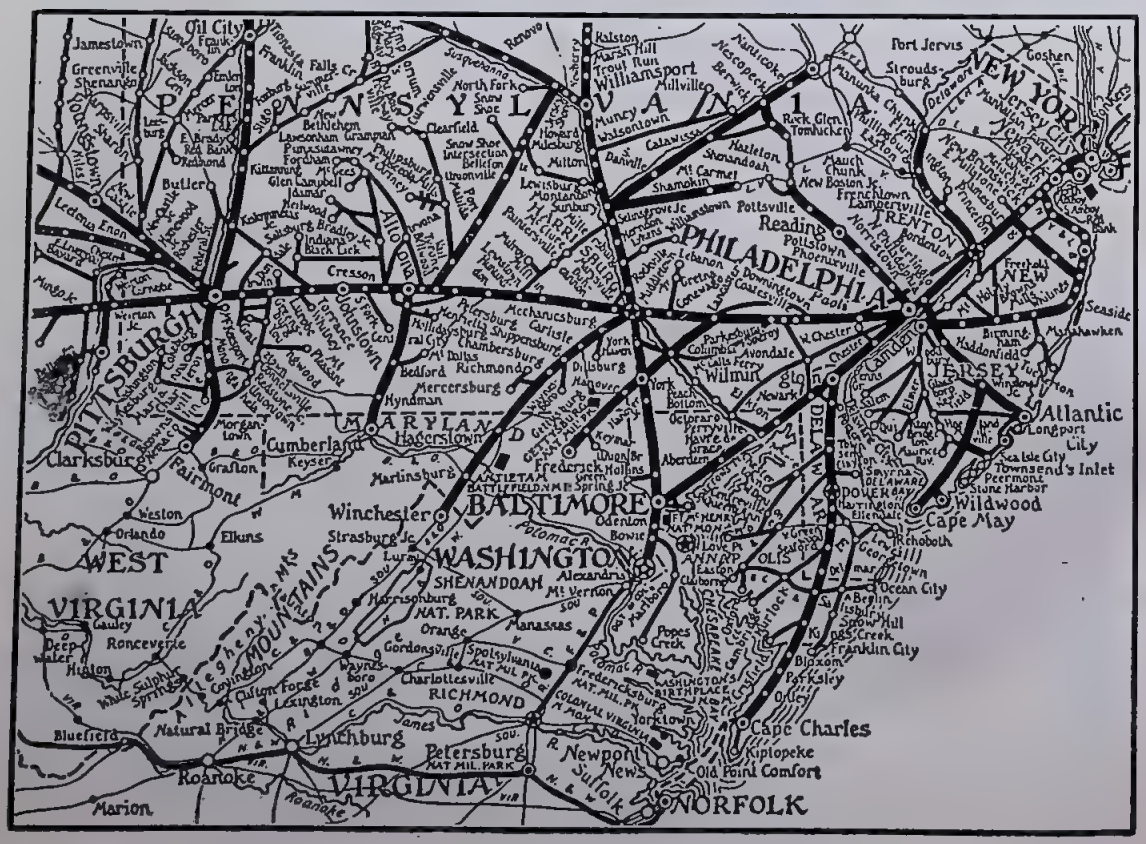
Missouri Pacific, receiving the preponderant share of the traffic because of its inclusive train service, reaches for still more of it through honoring arrangements. A St. Louis-Houston ticket is good via Monroe, Alexandria, and Beaumont; or via Texarkana, Longview, and Palestine; or via Dallas, Fort Worth, and Waco. A San Antonio ticket is good via the direct line or via Dallas and Fort Worth. And one to Corpus Christi or the Rio Grande Valley will be honored via Houston or San Antonio. To make it still more interesting, all such tickets are good via Memphis. The result is that Missouri Pacific handles about five Texas passengers to each two who go by Frisco-Katy.

Widest open territory is that between Houston and Kansas City. This area breaks at North Texas and in mid-Oklahoma into three segments. Interested carriers just about tell their patrons that any ticket is good on any train going in the right direction.

Five roads join Houston with North Texas. They are Burlington-Rock Island, I-GN (Missouri Pacific), Missouri-Kansas-Texas, Santa Fe, and Southern Pacific. B-RI runs three day trains, no night service. I-GN has a local night train without sleeper. Katy operates two trains 12 hours apart, the night service offering sleeper accommodations, and Santa Fe service is the same. Southern Pacific has two streamlined day trains and one night train with sleeping cars. Seven day trains, four night trains, and three of them with sleeper service. No matter how the ticket reads, it is good on all other lines, with a single exception that I-GN and M-K-T won't honor each other's tickets. Passenger satisfaction is assured — if the passenger knows about the arrangements.

Much of the traffic between North Texas and Kansas City is so-called business travel. The passengers want to stop en route. But no carrier has good service via both Oklahoma City and Tulsa, most important intermediate points. And ticketing routes don't provide for interchange in Oklahoma; a ticket must *read* via one line all the way. Buying point-to-point. one-way first-class fares are $7.81, $3.88, and $8.15. These charges are for passage from Dallas

A widely used optional route is the Philadelphia-Baltimore-Washington-Harrisburg jog, allowing 155 miles of extra travel.



to Oklahoma City, to Tulsa, to Kansas City; and if only the ticket-*selling* tariffs be consulted, their total of $19.84 must be paid by the traveler making calls in both Oklahoma cities. However, passengers who know their honoring arrangements can enjoy the best train service, make the stops, and still travel on a through ticket costing only $16.34.

The interested roads are Frisco, Katy, Rock Island, and Santa Fe. Rock Island and Santa Fe run via Oklahoma City, not via Tulsa. North of Oklahoma City, all four lines compete for traffic to Kansas City, Frisco alone doing it via Tulsa. Santa Fe comes back into the picture at Tulsa with its stub line to Kansas City.

No matter how it reads, a North Texas-Kansas City ticket is good the way it reads, or via Rock Island or Santa Fe up to Oklahoma City, thence via two of the four lines. And north of Tulsa, Frisco, and Santa Fe tickets are good on either road.

The Colorado common-points arrangement is similarly wide open. Tickets between Denver and Pueblo, or Colorado Springs and either point, no matter how routed, are good on any train operated by Santa Fe, Colorado & Southern, or Denver & Rio Grande Western.

Exchange arrangements offer another method by which a passenger may improve his bargain. Those fanning west, southwest, and northwest from Chicago appeal to commercial travelers who must multiply their stopover cities on the way to the West Coast. A salesman buys his San Francisco ticket at Chicago, routed via any line to Kansas City. He can exchange the Kansas City coupon for transportation to Omaha, Sioux City, St. Paul or Minneapolis, Duluth or Ashland. Up to such intermediate destination he can choose his railroad and use any of its optional routes, stopping anywhere; the only additional rail cost is one way from the exchange destination back to Kansas City, where the original ticket is put to use.

Subject to some restrictions, tickets via either of the direct Chicago-Kansas City lines will be exchanged for tickets via St. Louis. Or if the original routing is via St. Louis, an exchange can eliminate that city, to enable direct travel.

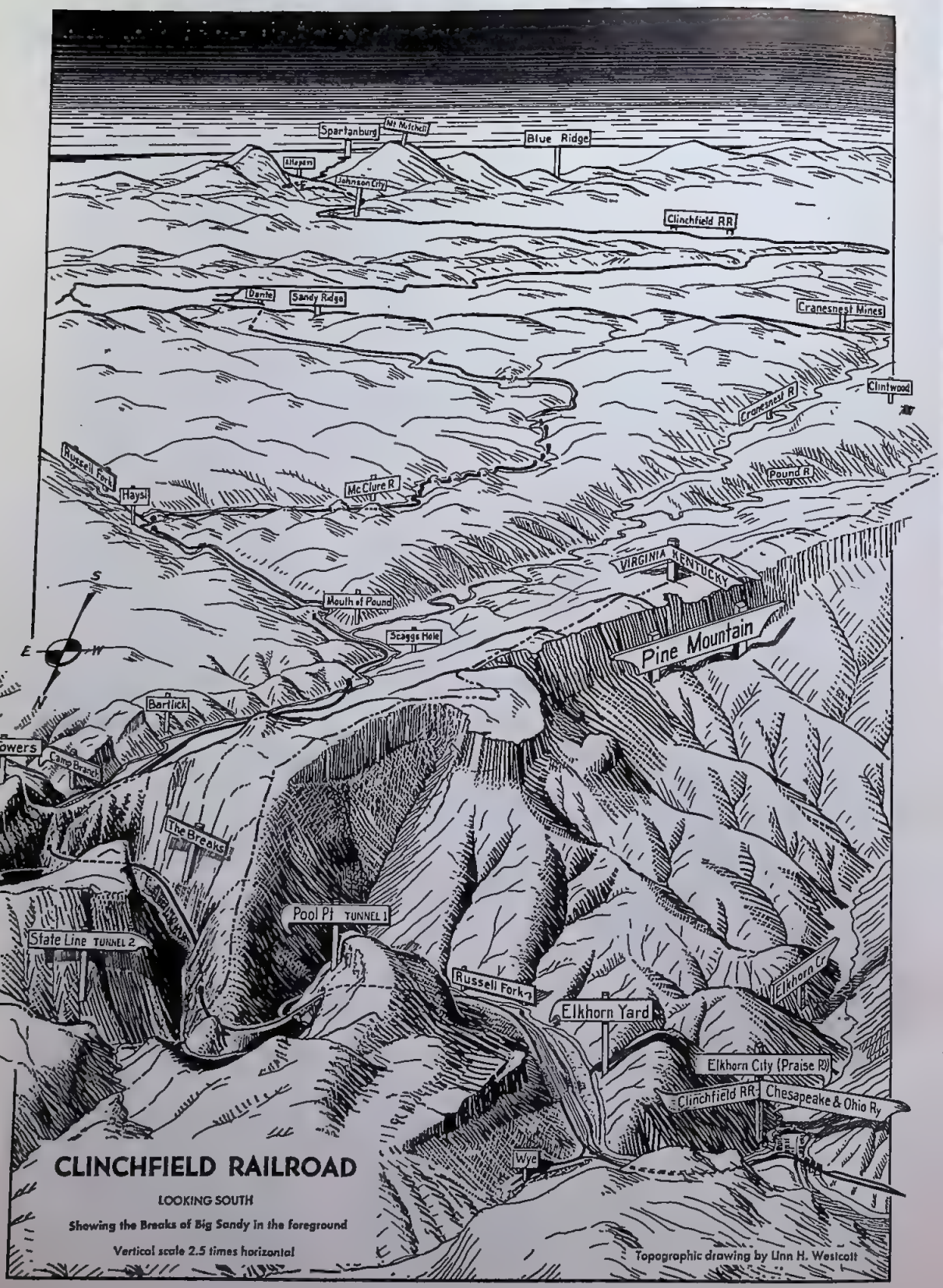
Louisville & Nashville offers to exchange its New Orleans-Cincinnati coupon for a ticket good via Atlanta, using Atlanta & West Point Route east of Montgomery. When the western end of this through ticket is on or east of International-Great Northern's main line from Fort Worth to Laredo, the exchange is free; when it's west of that line the additional collection is $5.45 coach, $7.55 first class. Southern Railway partially meets this offer; it will honor, without exchange, a New Orleans-Cincinnati coupon via its direct line, via Atlanta and Chattanooga, via Atlanta and Knoxville, or via Chattanooga and Knoxville. The difference is that on the Southern, routing via Atlanta, via Knoxville, is not possible if the original ticket includes transport west of the I-GN Texas line.

Both Southern Pacific and Missouri Pacific offer side trips from Houston to Corpus Christi and back to San Antonio for $9.55. Tickets are sold to travelers routed via Houston and San Antonio to or beyond El Paso or Monterrey. The same privilege is available eastbound. For $16.30 the side trip's destination will be made Brownsville, tip of Texas.

A side trip may cost something, or be conditionally free. Union Pacific charges $1.20 for a bus round trip from Las Vegas to Boulder City, Nev. But if the ticket that carries passenger through Las Vegas is routed via Union Pacific from Daggett or points west (Los Angeles) to Huntington or Missouri River and beyond, the side trip is free. One-way distance is 24 miles; the charge is reasonable. But multiplied, such baby items run into heavy money, and their elimination bulks large enough to swing organization travel to UP's long-haul route when business and fraternal groups plan their journey to a convention.

Biggest drawback to making use of diverse routes, is that it's quite a task to plan your itinerary. Even experienced railroad men must be careful. The passenger who wants the best bargain must scour the market. If he's in a city with traffic department offices, he can call personally, name the places he wants to visit, and ask what is offered. Or the same queries can be made by mail. All carriers serving the territory should be included. The passenger might well ask specifically what optional routings are available. If the responses are inadequate, as some will surely be if the trip is the least bit complicated, he can write to headquarters of the interested roads. The information may be hard to get, but it is available.

While your first experience with setting up an itinerary planned on optional routes and side trips may leave you a bit disgruntled, you'll find the task much simpler the second time, and well worth the effort.



CLINCHFIELD RAILROAD

LOOKING SOUTH

Showing the Breaks of Big Sandy in the foreground

Vertical scale 2.5 times horizontal

Topographic drawing by Linn H. Westcott

Survey of a New Route

Surveyors of two railroads fought time and the elements in race to occupy the narrow gorge of Big Sandy River

BY TED O'MEARA AND O. K. MORGAN*

When George W. Stevens, then president of the Chesapeake & Ohio Railroad, told J. M. Barr, vice-president and general manager of the Seaboard Air Line, that the C&O was about to take possession of the "Breaks" of the Big Sandy River on the Kentucky-Virginia state line in order to block the proposed construction there of the South & Western Railroad (now Clinchfield), he made a slip which resulted in the C&O's losing chances to gain a natural route through Pine Mountain. Unbeknown to Stevens, Barr had already entered into negotiations with the S&W's promoter, George L. Carter, for southern connections with the proposed new railroad. Forewarned of the C&O's plan, Carter launched a counter-attack which later resulted in a court decision giving the right of way to the S&W.

It was a battle not unlike the better-known Royal Gorge war in which the Santa Fe blocked the Denver and Rio Grande from entering the Colorado mountains some 25 years previously. While there was no actual skirmishing in the "Battle of the Breaks" there was a tenseness in the situation between the two surveying parties in the narrow gorge and equal tenseness in the executive offices of the two railroads seeking the strategic route.

For the entire 100 mile length of the Virginia-Kentucky state line only one break through Pine Mountain is suitable for a good through railroad route. This water gap, known as the Breaks, is a narrow gorge some four miles long with cliffs towering a full 2000 feet above. Through it flows Russell Fork, a branch of the Big Sandy River, a steep and treacherous stream that uses all of the gorge bottom for itself.

Even before the Civil War many railroad projects were proposed from the Ohio River to the Carolinas, and any one of these would have been forced to build through the Breaks, as no other practical route existed. The "3-C" project almost made it. This was the Charleston, Cincinnati & Chicago Railroad, a 600-mile line from Charleston, S. C., to Ashland, Ky. In a big construction push of the late '80's more than half of the 3-C line was built and in operation. Many more miles were graded, including work at the Breaks, when the British banking firm that had already advanced $7 million collapsed. The northern and southern ends of the line eventually went to the C&O and Southern systems, while the middle part, isolated from the ends, was operated for a number of years as the Ohio River & Charleston Railway. The OR&C went into financial difficulties and ended up with some 30 miles of track south from Johnson City, Tenn., little more than a lumber road with 60-pound rail, and the questionable asset of another 100 miles or so of graded roadbed.

This roadbed was partly acquired from the old 3-C and partly constructed by the OR&C in a second vain attempt to tie up the loose ends of the old 3-C route. But along with the 30 miles of track it was an attractive start for Carter's South & Western Railroad, so he bought it. Tracklaying was gradually pushed southward over the hairpin loops at Altapass toward the connection with the SAL, and meanwhile preparations were made for the northward extension through the Breaks.

Mine owner Carter was operating on a frayed shoestring but he had a farseeing mind and quickly grasped the situation which offered a chance for development and wealth. He had become interested in the coal area known as the Clinchfield, south of Pine Mountain. The new extensions on the S&W would give this region an outlet to the markets of the South Atlantic territory. These lines were completed from the mines to Spartanburg, S. C., by 1909 and the name of the company was changed to Carolina, Clinchfield & Ohio. But it was the farsightedness back in the early years of the century that allowed completion of the line through the Breaks, finally making a through route possible in 1915. Although the line was not built for nearly 15 years, it was the battle between the S&W and the C&O long before a rail was laid that determined which company should control the Breaks.

For the C&O camp the battle for the route began on a cold midwinter Sunday in 1901. The only sound in the early morning quiet was the clop of a horse's hoofs as a young resident construction engineer, Leonard B. Allen, cautiously rode through a frozen wilderness on a trail leading from Clintwood, Va. Even this sound soon disappeared, for Allen had traveled only four miles when the horse tripped in a hole and sprained an ankle. Allen dismounted, tied the bridle short, smacked the horse on the flank and watched it limp

*Based on articles by Mr. O'Meara in the C&O Lines' magazine *Tracks*, and Mr. Morgan in the *P&N and D&S Magazine*.

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South & Western Railway Co.

GENERAL OFFICES—BRISTOL, TENN.

ALFRED WALTER, Chairman, 24 Broad Street, New York.
GEO. L. CARTER, President, Bristol, Tenn.
ARCHER A. PHLEGAR, Vice-President, Christiansburg, Va.
M. J. CAPLES, General Manager, Bristol, Tenn.
I. McQUILKIN, Comptroller, "
J. C. STONE, Treasurer and Auditor, "
J. NORMENT POWELL, General Counsel, "
LEWIS WALKE, Gen. Freight and Passenger Agent, "
J. FRED JOHNSON, Purchasing Agent, "
F. POWELL, General Claim Agent, "
M. H. WEILER, Trainmaster and Car Accountant, Johnson City, Tenn.

7	5	3	1	Ms.	*August 28, 1905.*	Ms.	4	2	8	6
P M	A M	P M	A M	....	LEAVE ARRIVE	....	A M	P M	A M	P M
‡5 40	‡8 30	‡3 40	†8 30	0	.....Johnson City[1]..⊙	64.0	10 30	4 50	10 05	5 07
3 52	8 45	3 55	8 45	4.9	.....Okolona.....	59.1	10 18	4 35	9 55	4 55
3 58	8 52	4 05	8 52	7.3	.....Marbleton.....	55.6	10 12	4 28	9 47	4 49
4 05	9 03	4 15	9 02	10.6	.....Unicoi.....⊙	53.4	10 00	4 16	9 37	4 39
4 14	9 11	4 23	9 10	13.7	.....Fishery.....	50.3	9 48	4 03	9 25	4 28
4 21	9 18	4 35	9 17	16.2	.....Erwin.....⊙	47.8	9 40	3 56	9 18	4 21
4 24	9 24	4 43	9 24	18.2	.....Loves.....⊙	45.8	9 34	3 51	9 13	4 16
4 27	9 28	4 50	9 30	19.5	.....Chestoa.....	44.5	9 30	3 47	9 09	4 12
4 29	9 30	4 53	9 32	20.0	.....Unaka Springs....⊙	44.0	9 28	3 45	9 07	4 10
4 40	9 42	5 07	9 45	24.0	.....Lost Cove.....	42.0	9 15	3 32	8 55	3 58
4 48	9 52	5 18	9 55	27.0	.....Narrows.....	40.0	9 02	3 20	8 45	3 48
4 53	9 57	5 24	10 00	29.0	.....Poplar.....⊙	35.0	8 55	3 16	8 41	3 43
5 00	10 05	5 33	10 09	32.0	.....Peterson.....	32.0	8 45	3 07	8 33	3 34
5 06	10 11	5 41	10 15	34.0	.....Huntdale.....⊙	30.0	8 40	3 00	8 27	3 28
5 13	10 18	5 48	10 22	37.0	.....Relief.....	27.0	8 32	2 50	8 18	3 19
5 22	10 28	5 58	10 33	41.0	.....Green Mountain...⊙	23.0	8 22	2 35	8 07	3 07
5 32	10 38	6 10	10 45	45.0	.....Forbes.....	19.6	8 10	2 20	7 56	2 56
5 39	10 47	6 17	10 57	47.4	.....Toecane.....⊙	16.6	8 00	2 08	7 47	2 47
5 58	11 06	6 37	11 20	52.2	.....Galax.....	11.6	7 40	1 37	7 35	2 34
6 09	11 14	6 46	11 32	56.3	.....Boonford .....⊙	7.7	7 31	1 27	7 25	2 26
6 13	11 21	6 53	11 41	58.7	.....Phillips.....	5.4	7 19	1 16	7 17	2 17
6 20	11 28	7 02	11 49	60.8	.....Penland.....	3.2	7 10	1 05	7 10	2 10
6 28	11 38	7 12	12 00	64.0	.....Sprucepine....⊙	0	†7 00	†12 50	‡7 00	‡2 00
P M	A M	P M	Noon	....	ARRIVE LEAVE	....	A M	Noon	A M	P M

† Daily, except Sunday; ‡ Sunday only. ⊙ Telephone stations.
Seventy-five miles in operation; 260 miles under construction.
Trains operated from Kink to Dante, Va., (9 miles) to connect with N. & W. trains, Pocahontas Division.
Connection.—[1] With Southern Ry. (*Eastern time.*)

George L. Carter's South & Western Railroad extended southward from Johnson City, Tenn., to Sprucepine, N. C., in 1905. Timetable and map are from the Official Guide of that year. The extension southward to Spartanburg was under construction, as was the line northward to Elkhorn City, with grading completed part of the way on this sector. The railroad at that time had four locomotives, five passenger cars, one baggage car, and 38 freight cars. Net earnings for 1905 were $38,956. Taxes came to $6000.

out of sight on the downward trail toward home. Then the 22-year-old future vice-president of the C&O (the position he now holds) set out on foot over the winding trail. General direction was northeast.

Fifteen snowy, slushy miles later, Allen came to a one-room log cabin, the first house he had seen since leaving Clintwood. Knowing it would be unsafe to pass without making himself known, he shouted from the trail and inquired the direction to the mouth of Pound River.

Surprisingly, the mountaineer in the doorway invited him in. Neighbors from other cabins back in the hills were there, visiting, and a bottle of corn whisky was making the rounds. Allen gratefully warmed his stomach with a nip and soon was on his way again—misguided by a practical joke of the revelers. Not only was he going in the wrong direction, but toward a danger zone: a mountain still. He met two of the moonshiners with jugs of whisky in sacks slung across their horses. Dressed as he was in a blue flannel shirt, khaki trousers, leggings, and a Spanish-American War soldier's hat, he looked like a "revenooer" or "law man." Fortunately, he was able to convince the men that he was a railroad surveyor, and they sent him on—away from the still.

Night came, and Allen slept under a cliff with a wood fire for warmth and a soft dusty floor for a bed. Before dawn he was again on his way, and as evening crept upon him he arrived at a two-room log house in the valley of the Big Sandy near the mouth of the Pound. That night, full of corn bread, sow belly, sorghum molasses, and weak coffee—a banquet compared with his preceding meals of soggy, frozen nuts picked up along the trail—he slept on corn-husk mattresses on a cord bed. Sleeping in the same room were six other people—men, women, and children—sprawled on two beds and on pallets on the floor. A log fire furnished light and heat, and the sliding board panels which served as windows kept out the winter breeze.

His host was 78 years old; the wife was 75. She had never been more than 20 miles from the place where she was born. But the old man was a traveler and a business man. He had been down the river, "on timber," and had seen the settlements. He ran a small water-powered grist mill, and up in the mountains he had a five-gallon whisky still. Natives came to the mill with their shelled corn; the miller took one eighth as his fee and returned seven eighths in corn whisky or ground meal. They were friendly people, and happy. One

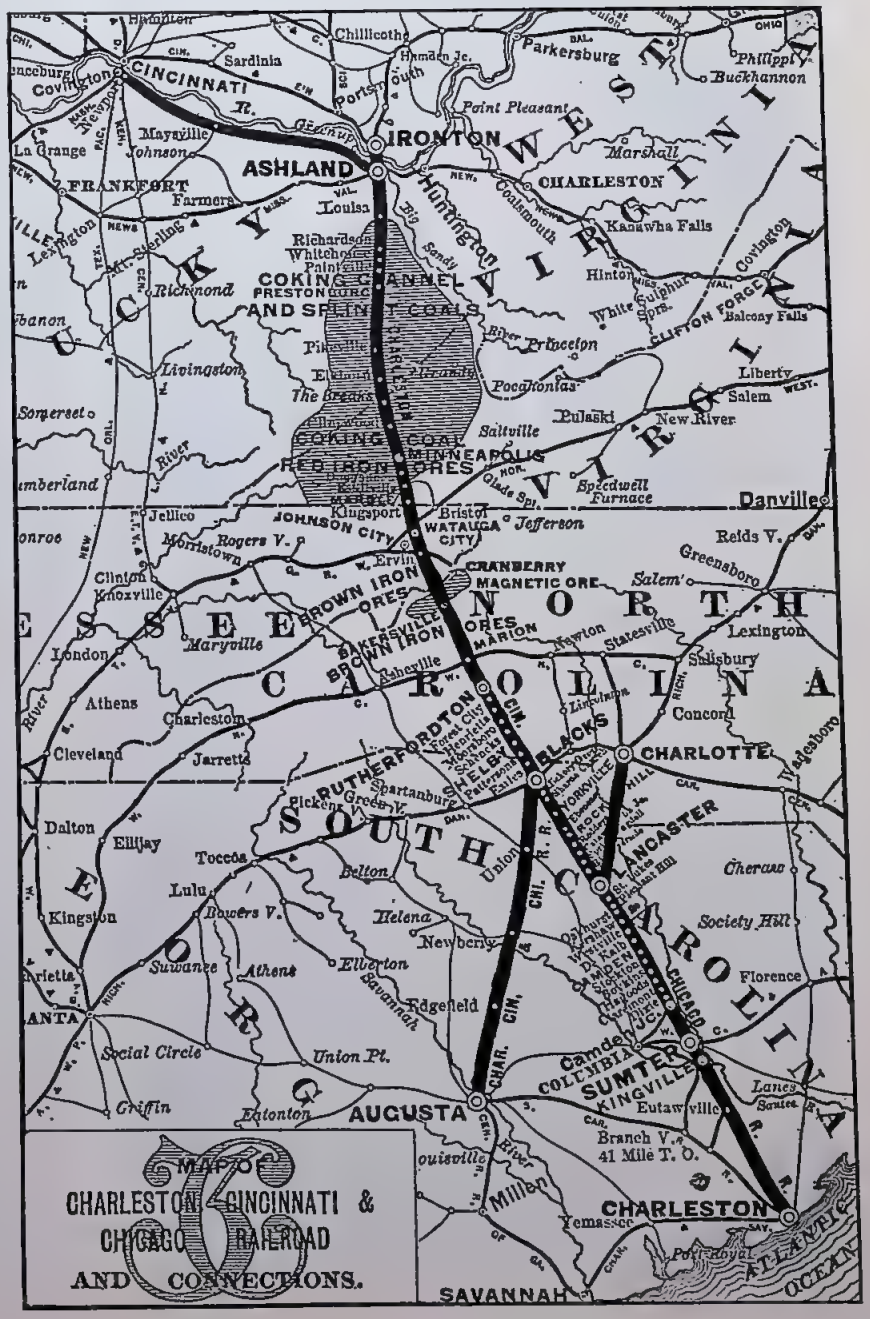
of the miller's sons was serving time in a Federal prison for killing a "revenooer." He was the hero of the clan.

Allen made this mountain home his headquarters while making trips up and down Russell Fork looking for signs of surveys or preliminary explorations by railroad surveyors. The natives gave no information. Only after becoming better acquainted did they reveal that several "furriners" with "plans and papers" had recently been there, doing just what he was doing and living at the same house.

He returned to Richmond, Va., and filed his report with Decatur Axtell, vice-president of engineering and finance. Then he was instructed to assist in organizing a party of engineers to go to the head of the Big Sandy and begin the survey of the Big Sandy Railway to extend from the mouth of Pound River, down the Russell and Levisa forks of Big Sandy, to the end of the C&O's lines at Whitehouse (then spelled as two words), a distance of about 85 miles.

The engineering party assembled on March 23, 1902, the day after Allen's marriage, at Ashland, Ky., on the Ohio River. The young engineer was in command. His wife was to join him later at whatever semblage of civilization they might locate in the mountains near his work. The party proceeded by train to Whitehouse over the C&O's branch which was originally built as the northern end of the 3-C project. From Whitehouse the party proceeded by a stern-wheel steamer up the river. The boat had living accommodations for 12 persons, and 120 were aboard. Most of the passengers were men returning from timber runs, and, as stated by a crew member, all had "two jugs and a jag" when they went aboard. Some of them played the banjo and sang mountain ballads throughout the night, but most slept in a cramped, drunken stupor on the two decks.

After a night and two days the boat was beached on a sand bar. The party disembarked and proceeded about five miles on foot to Pikeville, carrying what they could of their instruments and


MAP OF
CHARLESTON CINCINNATI &
CHICAGO RAILROAD
AND CONNECTIONS.
CINCINNATI
IRONTON
ASHLAND
CHARLESTON
FRANKFORT
COKING CHANNEL
PRESTON CORC
AND SPLINT COALS
COKING COAL
RED IRON ORES
MINNEAPOLIS
JOHNSON CITY
WATAUGA CITY
CRANBERRY MAGNETIC ORE
BROWN IRON ORES
BAKERSVILLE BROWN IRON ORES
RUTHERFORDTON
SHELBY
BLACKS
CHARLOTTE
LANCASTER
CHICAGO
CHAR. CIN.
Camden
COLUMBIA
SUMTER
KINGVILLE
AUGUSTA
CHARLESTON
SAVANNAH
ATLANTIC OCEAN
WEST VIRGINIA
KENTUCKY
VIRGINIA
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
TENNESSEE
Huntington
Parkersburg
Point Pleasant
Marshall
Kanawha Falls
Hinton
Princeton
Pocahontas
Pulaski
New River
Salem
Liberty
Danville
Reids V.
Greensboro
Salem
Lexington
Salisbury
Concord
Statesville
Newton
Lincolnton
Wadesboro
Cheraw
Society Hill
Florence
Eutawville
Branch V.
41 Mile T. O.
Yemassee
Port Royal
Lancaster
Newberry
Edgefield
Elberton
Athens
Suwanee
Social Circle
Union Pt.
Griffin
Eatonton
Belton
Helena
Toccoa
Dalton
Ellijay
Kingston
Cleveland
Athens
Charleston
Jarrett
Morristown
Rogers V.
Knoxville
Maryville
London
Jellico
Kingsport
Bristol
Jefferson
Speedwell Furnace
Glade Spr.
Salt Ville
Pikeville
Paintsville
Richardson
Whitehouse
Louisa
Big Sandy
Coalsmouth
Ashland
Portsmouth
Chillicothe
Hamden Jc.
Sardinia
Covington
Ceredo
Mayville
Johnson
Farmers
Mt. Sterling
Lexington
Richmond
Livingston
Somerset
Cumberland
Clinton
Knoxville
Ervin
Morristown
Rogers V.
Jellico
Kingsport
Bristol
Jefferson
Speedwell Furnace
Glade Spr.
Salt Ville
Pulaski
New River
Pocahontas
Princeton
Hinton
White Sulphur Spgs.
Balcony Falls
Clifton Forge
Covington
Buckhannon
Philippi
Marion
Spartanburg
Greer
Pickens
Union
Chester
Lancaster
Camden
Sumter
Kingville
Eutawville
Branch V.
41 Mile T. O.
Charleston
Yemassee
Port Royal
Savannah
Augusta
Louisville
Millen
Savannah
Edgefield
Newberry
Helena
Belton
Toccoa
Lulu
Bowers V.
Kingston
Dalton
Ellijay
Cleveland
Athens
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Jarrett
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Cumberland
Clinton
Knoxville
Ervin
Morristown
Rogers V.

The Clinchfield is a tortuous railroad not only in the vicinity of the Breaks but elsewhere on the line as well. This photograph, taken from above a tunnel portal south of Altapass, N. C., about 175 miles south of the Breaks, is typical of the winding, climbing character of the road. The tunnel barely discernible in the distant mountainside is far below the railroad which curves away to the right along the Blue Ridge. The line reaches it by a long, devious route.

supplies, and leaving the camp equipment, food, and heavy supplies to be hauled by wagon on up the river. Allen was anxious to get the survey made and the maps filed in advance of the competitors.

The roads out of Pikeville were in such condition that it was necessary to proceed on foot, carrying only the surveying instruments. This meant a 25-mile hike over mud roads along the river banks. Food and lodging were procured from the mountain people.

After an overnight stop at Elkhorn City, a town with a general store and two dozen houses, the party hiked over the top of Pine Mountain, right on the Kentucky-Virginia state line, to the mouth of Pound River and moved in with the old couple in the two-room log house where Allen had stayed a few months before. They stayed there until the camp equipment arrived several days later.

The survey was begun immediately upon arrival. It was the roughest going conceivable. Boulders as big as houses blocked the way. Sheer cliffs hundreds of feet high were encountered. Progress was slow, the days were all too short, and the chief worry was that time was fleeting.

Meanwhile, Carter had not been sleeping A surveying party under the leadership of Frank H. Cothran, now president of the Piedmont & Northern and the Durham & Southern railways, made the difficult trek by foot, carrying instruments and supplies on their backs over the hills and mountains and wading or swimming swift streams. The start was made from Carter's Cranesnest coal operation on a branch of the Norfolk & Western near Coeburn, Va., 23 miles from the "Breaks" by air but closer to 30 on foot and 45 for the horses and wagons which followed with meager camp equipment and supplies. They camped just opposite the tall craggy rocks known as the Towers, even closer to the gorge than the C&O party, and they worked in both directions. Knowing of the C&O's efforts to thwart their plans, they worked day and night — by candlelight — until their location maps were ready to file, and at the same time several crews of laborers started grading particularly strategic parts of the line.

Two days after Allen's party had begun surveying, the opposing forces met. That night Allen left on horseback for Clintwood, 20 miles away. The next morning he telephoned to the nearest telegraph office and dispatched a message to Richmond, advising that the competitors had arrived and were at work. He then rode on to Norton and waited for a reply. In two days it came. The instructions were brief, but the order was not easy to fill. He was to employ all the men he could muster to come with shovels, hoes, mattocks, or whatever tools they could get; and with this ragged force he was to start building a railroad that had not yet been surveyed. In the meantime, he was to proceed with the survey. Help, consisting of contractors with equipment, would be sent immediately, and funds would be sent by messenger.

With only $100 (his expense money), Allen started a $5 million job. A force of 40 men was hired. Where they came from, nobody knew and nobody asked; but not one of them lived within five miles of the work. Word had reached them via the "mountain telegraph" that work was to be had. All went

well until Saturday, when the men wanted their pay. The messenger who had been dispatched from Richmond had not yet arrived. But a little persuasion, an I.O.U. and $1 in cash to each of the workmen turned the trick. All of them were back on the job Monday morning.

Then Cothran's outfit on the other side of the river saw what was happening. In a few days dirt was flying on both sides of the river. Finding some blasting powder and dynamite, the S&W men showered the C&O engineers with rocks, debris, and stumps. This continued for several days, and then Allen's help from the outside began to arrive: a chief engineer, contractors' outfits, office forces, additional engineers — the nucleus of an organization for the construction of a railroad.

After two or three weeks of the roughest of mountain surveying, followed with all-day and all-night work on plotting and mapping as the notes were brought into the office tent, the C&O tracings were finished and ready to go to Frankfort, the capital of Kentucky.

It was a bedraggled and wet messenger who contacted Messrs. Axtell and Wall at Hotel Williamson in Pikeville that rainy night. At daybreak they were all on the steamer for the first lap of their treck to Frankfort.

But after all the toil, trouble, risk, and effort, the Chesapeake & Ohio lost the fight for the line through the Breaks of the Big Sandy. The courts awarded the right to build that 10 miles of railroad to Carter's South & Western, "by right of prior location." After this decision, in 1902, the time limit on construction was met to an extent that protected the right of way until final construction was begun in 1912.

The C&O, meanwhile, proceeded with building a line from Whitehouse to Elkhorn City, and by 1905 had opened up a vast field of high-grade coal just north of the Breaks. The Clinchfield line was finally completed in 1915 when a group of track men, miners, railroad officials, and townspeople watched George Carter tap at the last spike three miles north of Dante, Va.

In order to run the line through the Breaks the surveyors had to resort to some engineering tactics that are very unusual. It was mentioned before that there was room only for the stream in the bottom of the gorge. This was so literally true that a tunnel a third of a mile long had to be built paralleling the river yet only a few feet from it. Eighteen other tunnels were cut through narrow necks where the river made sharp bends. At the summit a 1½-mile tunnel drops the line into the little mining town of Dante where the Elkhorn's extension project connected with the rest of the Clinchfield system. Together with a very short tunnel near the longer Towers tunnel which was subsequently opened up, this made a total of 20 bores on this part of the line.

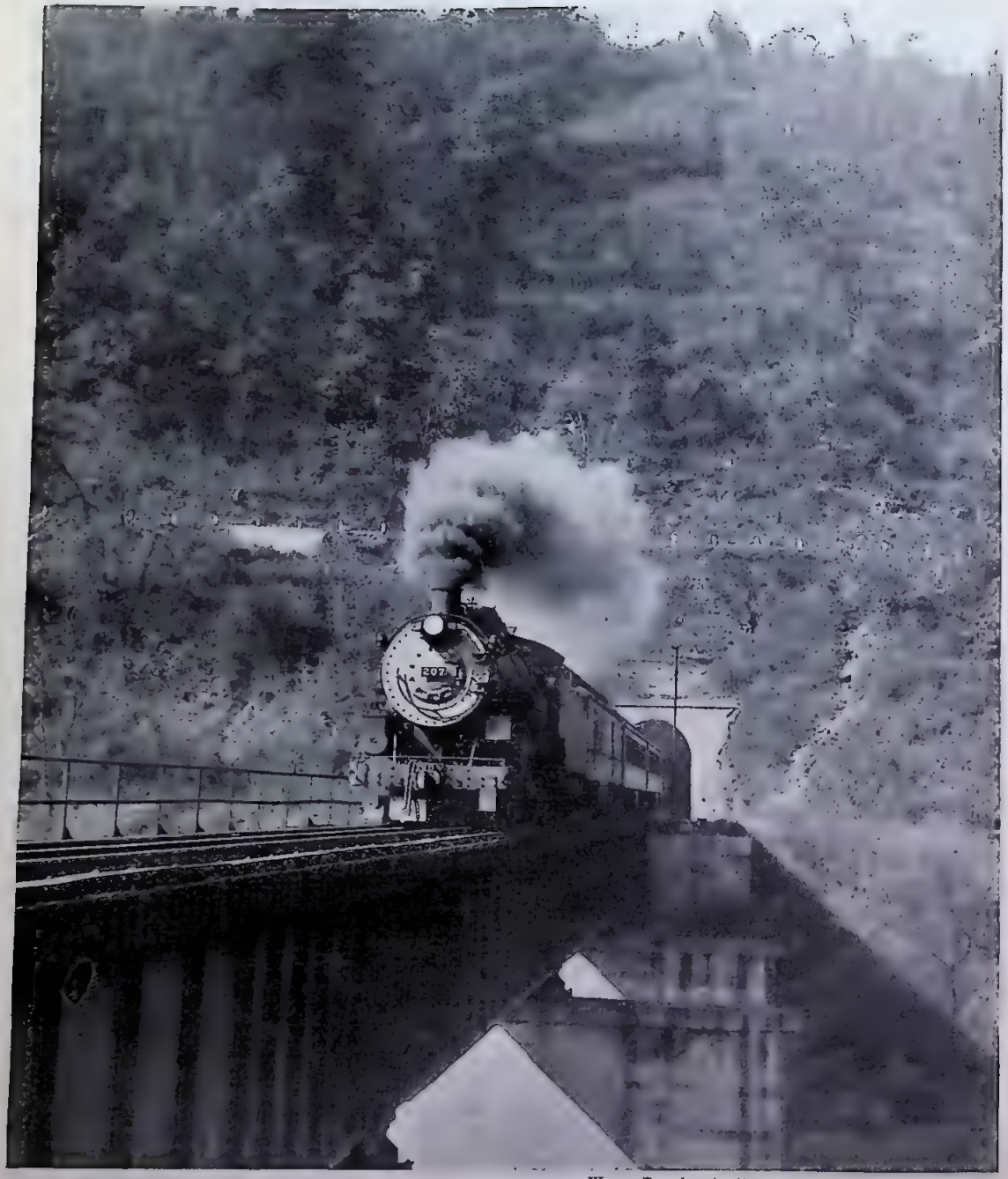
Because the river bed was so steep a climbing grade of 1½ per cent was necessary for southbound trains through the Breaks. Most of the curves were made 10 degrees (573.7 feet radius). While little seen by present-day travelers (Clinchfield runs only one coach train each way as an accommodation for its shipper communities), the Breaks and the near-by Towers combine the ruggedness of the Royal Gorge with the slender beauty of Curecanti Needle all in the short space of a mile, with the State Line Tunnel thrown in for good measure.

Since the time of original construction the coalfields north of Pine Mountain have been expanded and developed by C&O feeder lines up the branches and streams flowing into the Big Sandy, making available hundreds of millions of tons of coal. The Clinchfield Railroad carries much of the coal originated on the C&O and other northern connections to interchange points at the southern end of their line — not only to the Seaboard Air Line, which it intersects at Bostic, N. C., but to Cothran's Piedmont & Northern and to the Southern and the Charleston & West Carolina at Spartanburg, S. C.

P&N and D&S Magazine.

George L. Carter was no longer president of the South & Western when the line through the Breaks was finally completed, and the railroad itself had changed its name to Carolina, Clinchfield & Ohio, but Carter was still a director of the CC&O and it became his privilege to drive the final spike in 1915, about three miles north of Dante, Va. The line is still owned by the CC&O but is leased jointly by the Atlantic Coast Line and the Louisville & Nashville and is operated under the name Clinchfield Railroad Company. Directly behind Carter, wearing the square hat, is Writer O. K. Morgan.

PHOTO SECTION



Wayne Brumbaugh, 858 Huntington Ave., Boston, Mass.

Eastbound Western Maryland train 2 emerges from quarter-mile Ridgely Tunnel in West Virginia to cross the Potomac River before proceeding through South Cumberland, Md. Immediately after passing the city it will again cross the river, duck into another tunnel and come out in West Virginia. A mile farther on it will once more cross the river into Maryland, there to continue along the north bank paralleling the old C&O Canal and (on the south bank) B&O.

Linn H. Westcott.

Moving freight trains down city streets involves difficulties not encountered in ordinary railroading. To serve industrial sidings in Portland, Ore., the Oregon Electric resorts to gantlet tracks→ which ease the curves. In Bloomington, Ill., the Illinois Terminal Railroad swings freight around corners↓ by means of special double-jointed coupler shanks (inset) which allow more freedom on sharp turns.

Henry J. McCord, Batavia,

Ira H. Eigsti, Buda, Ill.

When the first Rock Island train entered Bureau, Ill., on September 2, 1853, its locomotive was a wood burner, and subsequent operation found conductor, brakeman, engineer, and fireman all lending a hand when stops were made for fuel. Today's coal-burning locomotives are serviced by a modern coal chute at Bureau, 114 miles from Chicago and junction point of the Peoria branch. Historic Starved Rock, last stand of the Illinois Indians when besieged by the Pottawatomies, Ottawas, Miamis, Kickapoos, Shawnees, and Chippewas in 1750, is visible from trains 10 miles east.

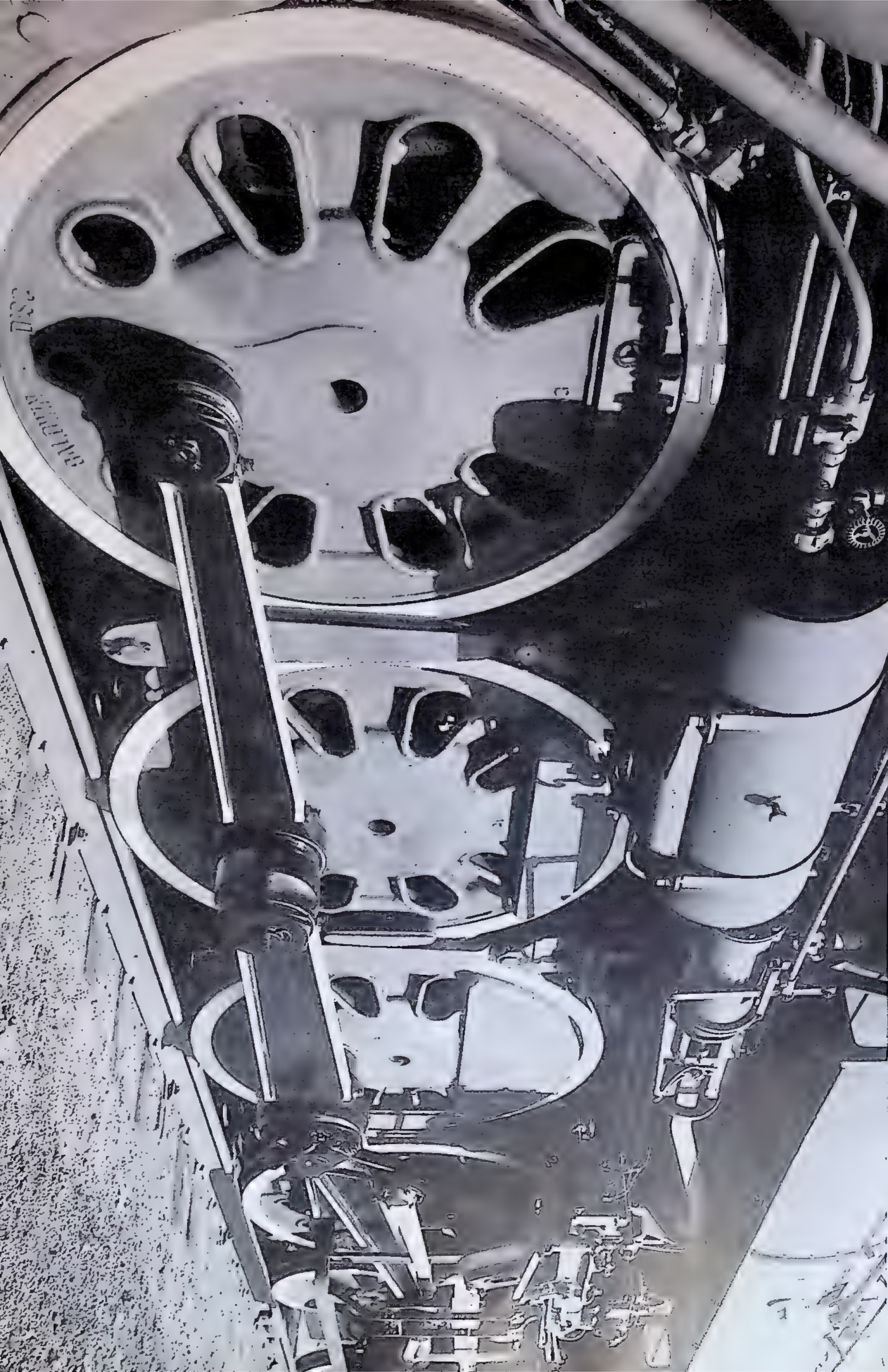
Courtesy United States Department of the Inter

Seward, Alaska, is southern terminus of the Federally owned and operated Alaska Railroad, which connects with boats of the Alaska Steamship Company at the head of beautiful Resurrection Bay. Here a twice-weekly passenger train waits at Seward before beginning its 470-mile run to Fairbanks. It makes the trip in three jumps: Seward to Anchorage, 114 miles, 4 hours 30 minutes; Anchorage to Curry, 134 miles, 4 hours 30 minutes; Curry to Fairbanks, 222 miles, 8 hours 55 minutes. Counting layovers, the entire trip takes 32 hours 15 minutes. Special boat trains are also run.

The Minneapolis, St. Paul & Sault Ste. Marie Railroad, better known as the Soo Line, is Canadian Pacific's largest independently operated railroad subsidiary, operating more than 4250 miles of line in the spring wheat states of Minnesota and North Dakota and eastward through Wisconsin and Michigan to Sault Ste. Marie, where connections are made with the parent company. Through lease of the Wisconsin Central entrance was gained to Chicago in 1909, and since 1932 the Soo has operated the Wisconsin Central as agent for the receiver. Time freight No. 24 approaches Byron, Wis., south of Fond du Lac on WC line.

Similar in design to the Boxpok driving wheel is the Baldwin disk driver, easily distinguishable from the Boxpok by the lips around the openings. Notice varying counterweights.

Erwin Al Spaulding, Bechaud Beach, Fond du Lac, Wis.



Symbolic of the encroachment of oil into the field of railroad operations is this view of the Oklahoma City's skyline with an oil-burning switcher in the foreground. Oil derricks are scattered throughout the Frisco's east yards in Oklahoma City.

Frisco Line

C. W. Witbeck, Southern Railway System, Room 1038, Washington 13, D. C.

Passenger service has been discontinued on the Mississippi Central since this photograph was taken at Brookhaven in 1940, but the 149-mile line from Natchez to Hattiesburg, together with the Louisiana & Arkansas and the Louisiana Midland, forms a connecting link between Southeast and Southwest, and two scheduled through freight trains are run in each direction daily. The line traverses extensive timber lands.

Tuskegee, Ala., home of Booker T. Washington's Tuskegee Normal & Industrial Institute for Negroes, is also headquarters of the Tuskegee Railroad Company, which operates freight, mail, and express service only between Tuskegee and Chehaw, six miles. Passenger service was operated in 1940, when this photograph was taken at Tuskegee. The 87-year-old line has always been a well-paying proposition. Even in 1933 it paid a dividend of $4.42 per $100 share. In 1937 the dividend amounted to a record $41.32.

O. W. Witbeck.

Frank Glodfelter, 9 Plymouth Circle, Asheville, N. C.

C. W. Witbeck, P. O. Box 2501, West Jackson, Miss.

Logging railroads must go where the logs are. For that reason they are tortuous affairs, winding with the terrain, resorting to switchbacks and other time-consuming devices to make their way deep into the woods where the virgin timber stands. Time is not of prime importance in the handling of logs by train, but power and the ability to take sharp curves is; so geared locomotives are the preponderant power on logging railroads. A logging train of the Bemis Lumber Company↑ eases downgrade in North Carolina. Wriggling along an undulating two-foot gauge track, a former trench locomotive← of World War I runs light up Trout Run, near Oakland, Md., to West Virginia Lumber Company operations a few miles south. Picture taken in 1921.

Wabash Railroad.

Among the newer trains which use the St. Louis Union Station is the City of St. Louis↑. Wabash handles this train west to Kansas City, where UP takes over. St. Louis Union Station serves more railroad companies than any other station anywhere in the world. Eighteen different railroads use its 42 stub tracks, 32 of which are covered by a huge train shed. The covered tracks are served by two throats, each of which spreads into a wye a short distance from the shed. The wye tracks form an interesting pattern where they cross→.

A. C. Kalmbach.

Fast Freight on the UP

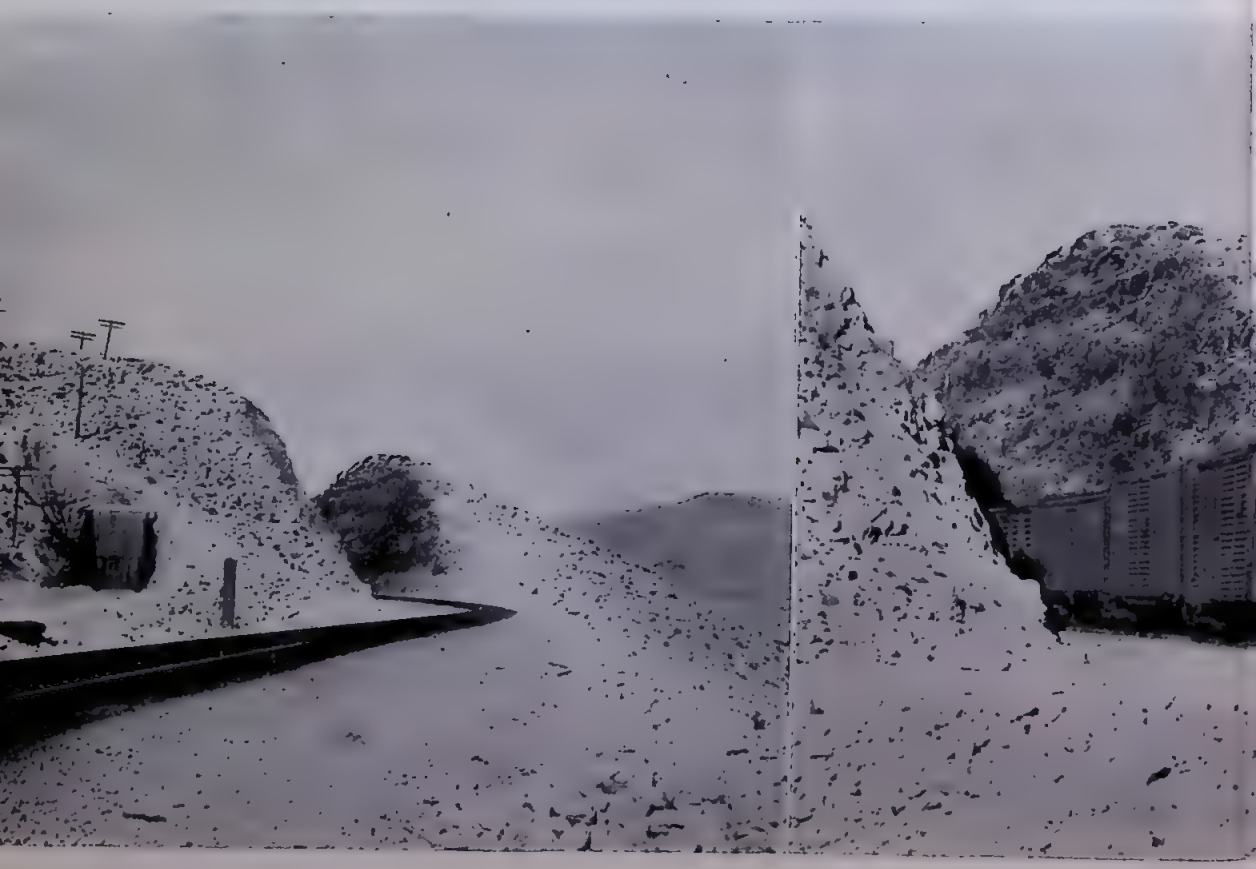
A ride over the Los Angeles Division in the cab of CN, speeding California-grown perishables to the markets of the East

BY TOM BAXTER

It's a balmy summer evening and the high overhead lights make the Union Pacific's East Yard, four miles east of downtown Los Angeles, almost as bright as day. From over near the roundhouse we hear the long, low notes of the whistle of one of the big 3800's as it backs slowly down the lead. As we walk along the path to the yard office the boisterous little 6028 rambles down the yard and slides to a neat coupling at the head of a long string of gondolas. He's making up an eastbound drag.

We are looking for the "CN," carrying the eastbound *Colton Fruit*, and about the hottest thing the railroad runs. We are going to ride her out of Los Angeles tonight and stay with her as far as Caliente, Nev., some 460 miles northeast. We are going to see what this train does in these 460 miles that are the main line of the Union Pacific's Los Angeles Division.

Tonight the CN is being made up as the CN and the CUX combined, CUX signifying California-Utah Manifest, and when we arrive at the track where the train is made up the engine is already on and the car inspectors are just taking down their blue flags. The engine is the 3800, first of the UP's famous 4-6-6-4 Challenger types, and she's just out of the back shops. These engines are among the most beautifully kept and



maintained in the country. From boiler sheathing to side rods they are polished to a gleaming satin finish, and the reflected lights from the glowing switch stands and lanterns glisten off the cylinders. We swing into the cab just as the conductor says "Highball," and the big Mallet's wheels begin to turn. Seemingly without effort the train is in motion.

Forty-six cars and a caboose furnish just enough of a load to make things interesting. Usually the CN runs with only a few cars to Colton and there picks up the fruit for the trip east, but since we are combined with the CUX we have 24 loads and 24 empties, 1850 tons. These engines are rated at 3490 tons from Los Angeles to Riverside, so we see our train won't hold us back.

The 3800's swiveling front end glides out onto the main iron now and we glance at our watch. 8:03 p. m. We left at 8, straight up. The engineer gives another tug on the throttle and we settle down to business. We are running as Extra 3800 East and our orders give us a meet with Extra 5092 West at Walnut, 21 miles out, and rights over Extra 2714 West as far as Ontario. All the westbound passenger trains have arrived, so we have only these two trains to meet. The eastbound passenger trains will not leave Los Angeles for another half hour. That's pretty clear sailing.

Before we get too far out along the line, let's take a little closer look at the division itself. It started life in Los Angeles in 1900 when the San Pedro, Los Angeles & Salt Lake Railroad was organized with plans to build to Caliente, there to connect with the Utah, Nevada & California Railroad. In 1901 the SPLA&SL bought the Los Angeles Terminal Railway, including its San Pedro, Pasadena, and Glendale branches, a total of 46.89 miles of track. In the same year it built its own depot and terminal facilities on the east bank of the Los Angeles

The 3830 lumbers upgrade through a new cut↓ just east of Sloan which bypasses a tunnel↙ on original line between Salt Lake City and Los Angeles.

All photos by Fletcher Swan, South Pasadena, Calif., except as noted.

River near the First Street bridge, just opposite the old Santa Fe station on the other side.

The SPLA&SL, or Salt Lake Route, as it came to be known, was owned and backed almost entirely by Senator Clark of Montana and his brother, who was at that time head of the Citizens National Bank in Los Angeles. They had made agreements for through traffic with the Union Pacific at Salt Lake City but at that time the larger railroad had no direct financial interest in the line and thought little of it other than as a potential feeder.

With its preliminary work behind, the young road turned its attention to expansion. In 1902 track was completed 38 miles east to the growing little community of Ontario and on July 7, 1903, it purchased the Utah, Nevada & California from the UP's Oregon Short Line, which had acquired it only a year before. This gave Senator Clark and his associates what they were working for—a through route from Salt Lake City to the coast.

The following year completed the main line with the exception of a 25-mile stretch in Nevada just south of Las Vegas. Finally, on May 1, 1905, an eastbound transcontinental passenger train left from the SPLA&SL First Street depot with Engineer "Baldy" Mason at the throttle. Los Angeles had its third transcontinental railroad route.

On August 25, 1916, the SPLA&SL went into an extensive financial reorganization. Having found the southern California connection highly profitable, the Union Pacific decided to take a direct interest in the line. It took over most of the financial obligations and changed the name to Los Angeles & Salt Lake Railroad. Then it leased the line to itself for operation. Personnel was retained and no major change in operating procedure was made. Even today the official name of the trackage from Salt Lake City south is still Los Angeles & Salt Lake, but it bears the same relationship to the Union Pacific as do the Oregon-Washington Railroad & Navigation Company and the Oregon Short Line. Occasionally one will see a locomotive with the standard "Union Pacific" lettered on the side of the tender but with the initials "LA&SL" on the rear, indicating that it is one of the group originally assigned to this portion of the UP. The LA&SL is a separate entity in legal name only, all the accounting and financial business being handled by the parent company's offices in Omaha.

The portion of the LA&SL southwest of Caliente, Nev., the Los Angeles Division, consists of 461.5 miles overall of main line and 100.7 miles of branches, making a total of 562.2 miles operated. The main line is divided into three subdivisions: the first, from Los Angeles to Yermo; the second, Yermo to Las Vegas; and the third, Las Vegas to Caliente. Both the second and third subdivisions are fully equipped with centralized traffic control and from Yermo down to Daggett on the first subdivision a short stretch of 4.6 miles has its own little C. T. C. machine in the depot at Yermo. This is a total of 300.9 miles of C. T. C.-operated main line, and, except for the section to Daggett, it is all controlled from the dispatcher's office in Las Vegas.

Here in the cab of the 3800 the lights of the trim passenger depot at East Los Angeles swim by on our left and we begin to leave the industrial atmosphere of the big city. The small homes and businesses of the suburban area back themselves against the right of way sometimes just a few feet from the track. We roll through Montebello at a cool 30, cross the Rio Hondo and cut through the back yards of Pico. The order board is out for us at Pico and the fireman picks up the rolled tissue in the loop of string. The dispatcher is changing our meet with the 5092 from Walnut to Spadra, some four miles farther.

With the lights of Pico dimming behind the caboose we rumble across the San Gabriel River, the switch of the Anaheim branch at Whittier Junction, and head northeast across the rolling countryside toward Clayton. The grade is beginning to rise now, but the 3800 doesn't seem to be bothered. We cut through rich farming lands, some of California's finest, and the right of way swings carefully on gentle curves following the contour.

To the north is the main line of the Southern Pacific. Even over the rapid exhaust of our own locomotive we can hear the raucous bray of an air horn and as we cross one of the many country roads we can see, off to our left, the lights of an SP passenger train heading east.

Walnut is passed as we continue to roll through several miles of walnut orchards in a narrowing valley. The grade is sharpening, sometimes almost one per cent, but the 3800 continues to crack the whip. Extra 5092 West is in the clear at Spadra and our headlight plays along it as we round the curve.

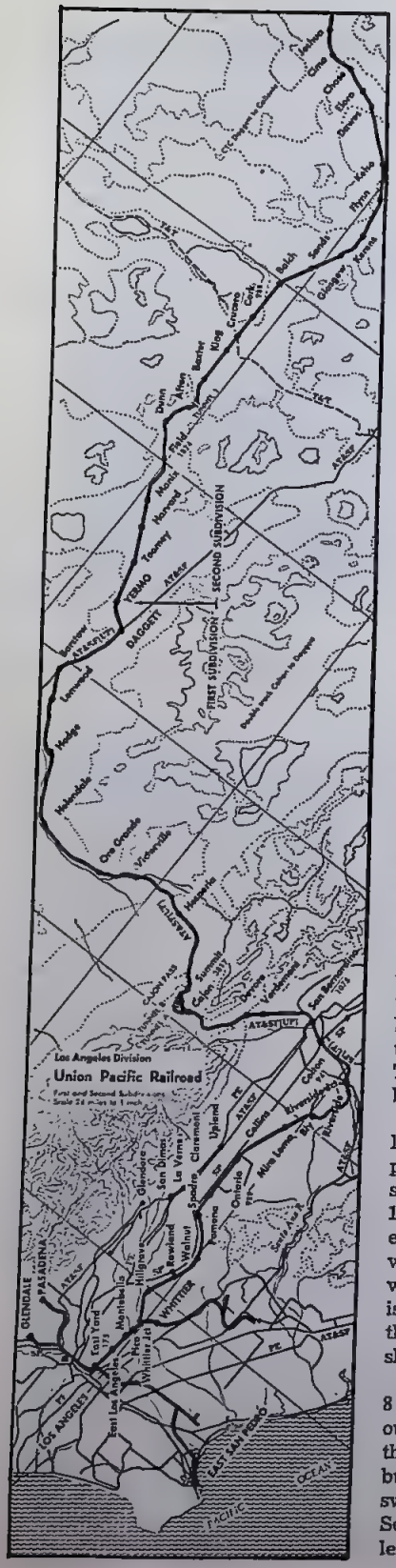
The highway overpass just west of Pomona blasts our exhaust back down around our ears. Ahead are the lights of the town, and clustered in the center of them are the markers and tail sign of the eastbound SP train we saw. From Pomona in the heart of the citrus belt, east to Ontario the Union Pacific and Southern Pacific main tracks parallel each other closely. Occasionally one hears tales of wild and fancy races, but they are dated considerably in the past.

At a leisurely 25 miles per hour we cross the city streets between lowered gates. Just east of Pomona proper is WO Tower. Here a spur of the Southern Pacific crosses the UP main and goes down to the little town of Chino. The interlocking signals are clear but the order board is red and we drift up to the tower under a heavy air application. We get two orders this time, the first giving us a straight meet with Extra 2714 West at Mira Loma, and the other telling us that No. 38, the *Pony Express*, and First and Second 8, the two sections of the *Challenger*, are all running 10 minutes late. That gives us just about time enough to get to Riverside ahead of them and get in the clear. Can we do it? We'll try.

Now, with something to run for, the 3800 picks up its train and begins to step. Soon we are whistling for Ontario. We slow for the street crossings and then, heeling to an easy curve to the right, swing away from the Southern Pacific and head southeast across the gently rolling terrain. The highway is just to our right, but few are the motorists with the daring to match our headlong speed.

At Mira Loma long dark rows of buildings are all that are left of the huge army quartermaster depot that was built during the war. The 2714 is still pulling in at the east end of the siding, so we check briefly until he clears and then resume. The sidings Bly and Pedley, the concrete viaduct over the Santa Ana River, Arlington with its spur to the army reception center at Camp

Eastbound No. 4, the erstwhile Transcon↑, enters the third subdivision at Las Vegas. The train at the water column is No. 44. Normally No. 44 preceded the Transcon out of Las Vegas but was overtaken at Rox, 64 miles farther east. One source of revenue on the Los Angeles Division is the U. S. Lime Products Plant↓ at Sloan, Nev., 19 miles west of Las Vegas.



Anza, all approach and recede swiftly as the CN-CUX wheels through the night.

We're slowing now for Riverside, and the lights of automobiles waiting at crossings blink up owlishly at us from the concrete ribbons on which they rest. We stop in front of the depot at 10:04; we're 11 minutes ahead of the passenger trains.

From Riverside over Cajon Pass to Daggett, trains of the Union Pacific operate over the Santa Fe tracks. The trains are handled by Santa Fe dispatchers, but they are also reported to the Union Pacific dispatcher in Los Angeles for reference and planning in relation to his own districts, and the men, necessarily, work together closely.

The Santa Fe dispatcher who takes over at Riverside has renewed the run-late orders we already have on the Union Pacific trains, so we have time to get on up to Colton. The 3800 snaps her train away from Riverside station and her deep-throated chime whistle sounds the one long and one short signal that asks for the UP route at Riverside Junction. We get the green almost at once and without a pause clatter over the frogs and switch points that go to make up the junction with the Santa Fe.

Up along the double track past Highgrove we rumble; residents of the sleeping communities along the iron highway are seldom aware of our presence in the night. The steel girders of the bridge across the Santa Ana River echo into the cab the sound of wheel on rail and with the flying sparks of applied brakes beneath and behind us we approach the heading-in switch at Colton. The time is 10:24 and No. 38 is due by at 10:30.

Once we are clear of the main line we can do our work while the passenger trains are running. We set out seven empties and pick up 10 loads, giving us 34 loads and 15 empties, 2215 tons. That tonnage will probably go right on through with us to Caliente, since this train is left alone as much as possible at the division points and it does no short or local work at all.

No. 38 rolls by at 10:31 and First 8 at 10:48. Imperiously she calls to our attention her green signals for the following section and although busy switching, we dutifully answer. Our work is done before Second 8 passes us at 10:55 and we leave as soon as the block clears.

Up from Colton to the eastbound freight yard at San Bernardino is only a couple of miles and we are in the clear there at 11:15 p. m. The 3800 cuts off and goes to the Union Pacific roundhouse for fuel, water, and general servicing. Back at the train the inspectors go to work again. It must be thoroughly examined before it again ventures on the main line; the tough pull over Cajon Pass lies just ahead.

When first early route surveys were made by the SPLA&SL, an entrance into the fertile San Gabriel Valley other than the Santa Fe's Cajon Pass or the Southern Pacific's San Gorgonio Pass was sought. But the coastal plain in which Los Angeles lies was, and still is, virtually inaccessible from the east or northeast except through one of these two breaks in the surrounding mountains. Since the connection with the Union Pacific was to be in Salt Lake City, San Gorgonio Pass to the southeast was ruled out and the new road concentrated the surveys in the Cajon Pass area.

It soon became apparent, however, that the Santa Fe had built along the best and easiest route through the narrow confines of the pass some 15 years earlier, and the new surveys showed that the cost of construction of almost any other grade would be prohibitive for the limited resources of the young organization. So, in 1901, an agreement was reached with the Santa Fe whereby the SPLA&SL would lease trackage rights from Riverside over Cajon to Daggett on a carmile basis, paying a percentage of operating and fixed costs.

By 1910 traffic had become so heavy over the single-track route in Cajon that trains of both the Santa Fe and SPLA&SL were taking almost all day to travel the 81 miles. Again the Salt Lake Route officials thought seriously of laying their own track at least part way across the pass. They went so far as to make comprehensive plans for the construction, paralleling the Santa Fe as far as Cajon station and then selecting a new route to Summit that, although about two miles longer, would be considerably less steep than the Santa Fe's three per cent grade.

However, before any construction was started they were approached by the Santa Fe with the

proposition that two single-track lines would be of less value to the roads singly than one double-track line for them both. To this the SPLA&SL agreed, so with the Santa Fe supplying a major portion of the capital and retaining the title, double track was built in 1911 and 1912 from San Bernardino to Summit. At Cajon station the old and new grades separated and the new track followed the newer survey of the Salt Lake Route to the top of the Pass. With its easier grades, that was the track used for the eastbound trains and being to the west of the original line accounts for the left-hand running over a major portion of the double track.

It's 12:50 before the 3800 is back on the train and the helper engine, the 5094, is coupled in ahead of the caboose. The brakes are tested, and we have the air-brake clearance as well as our train orders, but Santa Fe No. 8, the eastbound *Fast Mail*, is due out at 1:20, so, rather than have to clear her on the heavy grade, we wait. She leaves on time but she, too, has green signals. Nevertheless we pull out right behind her for we have a two-hour run-late order on the second section. Slowly our two big engines move their 50 cars up out of the yard and onto the main line. Past the dozing passenger station we chuff and round the big curve that heads the double track north toward the gash in the mountains.

Now for the first time the 3800 really begins to work her passage. The thunder of the Mallet's dual exhaust seems to vault into the night skies as the grade makes itself felt. The twinkling street lights of San Bernardino fade and for several miles we are on the long straightaway leading to the foothills. The unmistakable air of the mountains moves in around us. At first the crashing noises of the engine are exhilarating, but soon the ear drums dull and the very monotony becomes soothing. Mile after mile with not the slightest variation in the rhythm of its wheels the 3800 bucks at Cajon. An occasional sudden rushing and a quick flash of lights is all that marks the passing of a westbound train.

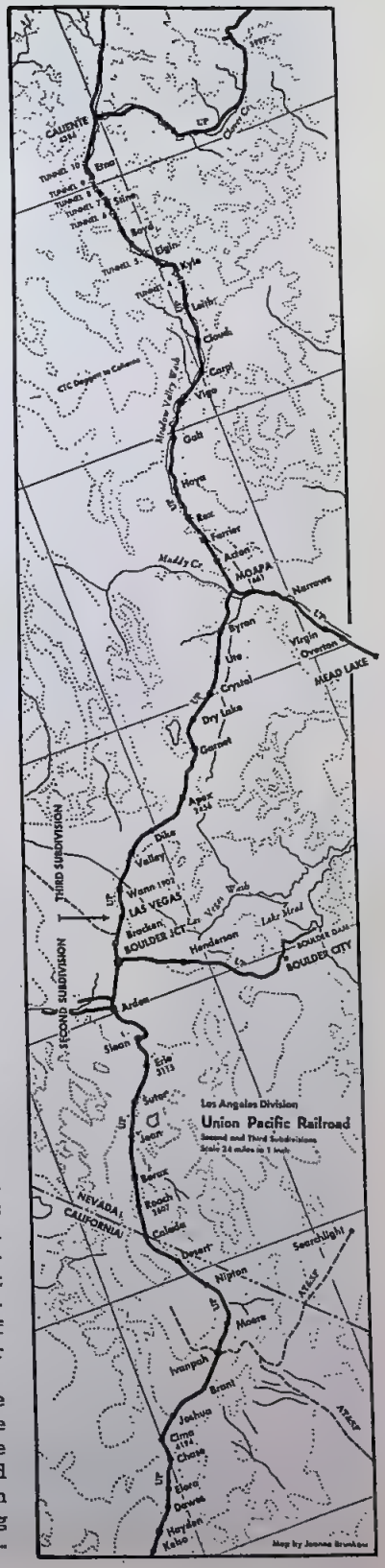
We stop on the main line at Keenbrook, halfway up the hill, for water. These big babies aren't easy on the water when they have a pull like this. Above Keenbrook the pass narrows and we blast our way through Blue Cut. We round several more curves and then are in sight of Cajon station. Just past the depot at Cajon the engine leans to the left and wraps the train around the sharp curve where the main tracks separate.

Now we blast along single track until the siding at Alray tells us we are close to the two tunnels on the eastbound track and also that we are not too far from the top of the hill. To the right, once through the tunnels, the westbound track begins to draw closer until finally it assumes its original double-track position. We almost reverse our direction on the 10-degree curve at the west end of Summit and, once through the cut, are on level track for the first time in 28 miles. Forty-nine cars to the rear, the 5094 is still laboring at the grade, and not until the 3800 is well past the Summit depot does the helper come blasting through the cut and take a respite from the work of raising a train the 2748 vertical feet from San Bernardino.

On through this level gash in the mountain tops we rumble until the helper is just past the depot. One long blast on its whistle is the signal to the head end that the helper and caboose are clear of the switch to the spur back up the side of the hill behind the depot. When the train has stopped the 5094 backs the caboose well up the incline, cuts off and pulls out, then backs up the main. The trainmen bleed the air out of the caboose and allow it to roll down onto the train. Two more loud blasts from the helper's whistle inform the enginemen at the head end that the caboose is on and the train is ready for an air test.

With this test made and the retainers turned up we are ready. From now on the grade is with us and the track fast. The 3800 puts the train in motion easily and quietly as we start down to Victorville. Almost before we know it we are up to speed and the engineer is making judicious use of the air to keep the speedometer needle at its proper point.

Lugo, Hesperia, and Thorn glide uphill, saluted on their way by the 12 mighty whirling drivers of the 3800. We slide under the westbound main line a few miles past Thorn and for the first time since leaving San Bernardino are on the right-



hand track. We drop back to a conservative 20 for the Mojave River narrows just outside Victorville, then roll on through town. The order board in front of the depot is red and the dispatcher gives us 10 minutes more on Santa Fe Second 8.

The 3800 now settles into a mile-eating pace on its roadway of steel and the long cone of light from its boilerhead precedes us across the desert like a great translucent finger. A westbound train approaches and passes us on the double track, its own headlight first rising like a star on the horizon, then growing into a veritable sun on earth, blazing in its moment of glory and dying beside us in a sudden explosion of dust and roaring steel.

Off to our right, in the east, a graying in the sky and a lessening in the brilliance of the million stars overhead is the first sign that a new day will soon be climbing over onto this side of the world. Silhouetted against this the semaphore arm at Helendale's little depot is bowed to our passing. Hodge is next, and then comes Lenwood.

About three miles from Barstow is a microphone where all eastbound trains sound their route signals for the towerman at Barstow's West Yard Tower. The 3800's golden voice asks for an alley and as we approach the tower it's all lined up. The time is 5:23.

Our stay in Barstow isn't long; just time to take a little more water, register in off of the Santa Fe's Los Angeles Division and out on its Arizona Division and test the air. The UP's Los Angeles Division continues on to Caliente, but we'll enter the second subdivision at Yermo. We have enough time on Second 8 out of Barstow to make it to the junction at Daggett, so at 5:39 our train snakes its way out through the cut in the east end of Barstow Yard and noses down the sag. We pass the huge Marine quartermaster depot at Nebo with thousands of trucks, tanks, jeeps, and "water buffaloes" lined up and stretching for miles, relics of a war just fought.

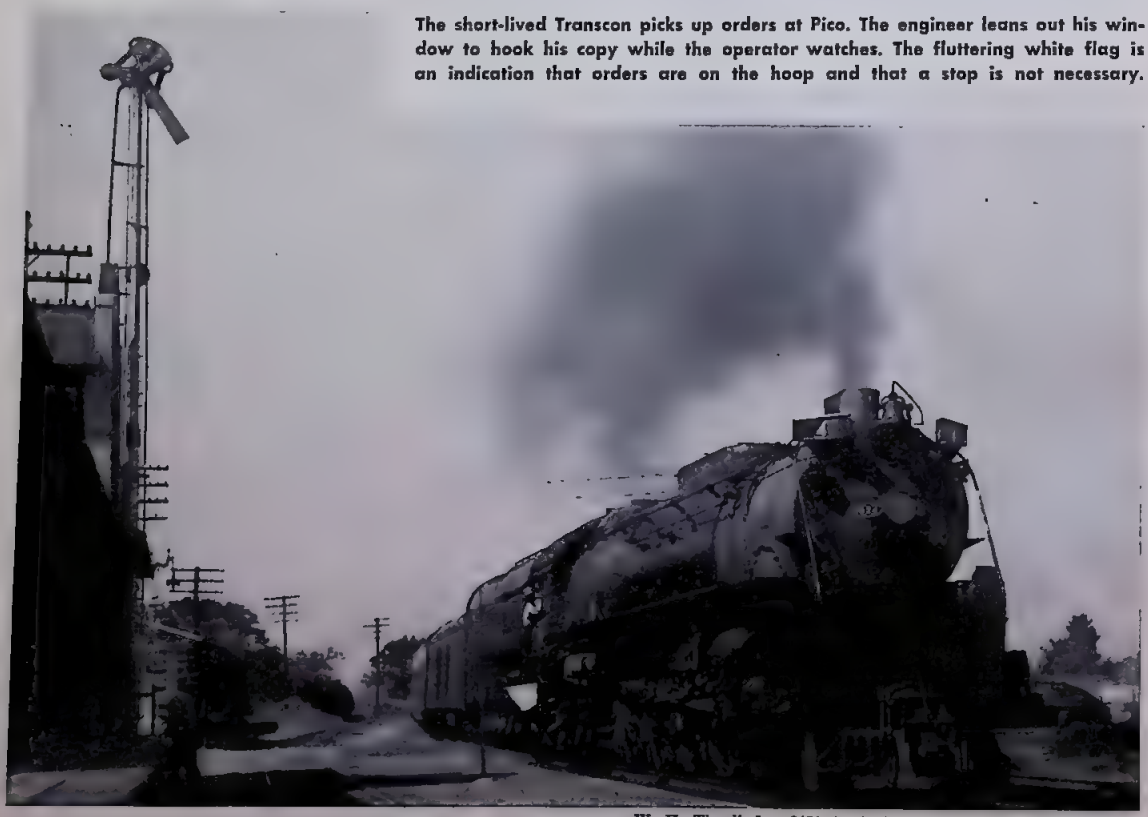
At Daggett we have to wait for Santa Fe No. 19, the westbound *Chief*, before we can cross over and swing around the curve that sends the Union Pacific main line off at a right angle to the Santa Fe. No. 19 runs, the signals clear and after 100 miles of feeling Santa Fe rail under her drivers the 3800 again rolls onto UP iron. The C. T. C. signals are clear for the little stretch into Yermo, and the end of the run for this crew is in sight.

As we head up the yard lead at Yermo we can see No. 3 with one of the big new 800 class 4-8-4's waiting at the depot for us to clear the main. We roll to a stop in the yard at 6:04 a. m., just as an early morning sun lights the tops of the multicolored Calico Mountains to the north. The day is just beginning on the desert.

A change of engines, cabooses, and crews, and the CN-CUX will be on its way. Entire crews are changed on the freight trains at Yermo, but on the passenger trains only the engine crews are relieved. The train crews run through from Los Angeles to Las Vegas, where all crews are changed on all trains.

When the 3837 takes the place of the 3800 at the head end of the train the sun is well above the tops of the distant hills. The hands on our watch say 7:20 and we are all ready to go. Already the heat of the day

The short-lived Transcon picks up orders at Pico. The engineer leans out his window to hook his copy while the operator watches. The fluttering white flag is an indication that orders are on the hoop and that a stop is not necessary.



W. H. Thrall Jr., 6451 Southside Dr., Los Angeles 22, Calif.

is beginning to make itself felt. The men who make this run think little of temperatures well above 115 in the shade and talk casually of days when the mercury reached 130.

The C. T. C. signal at the east end of the Yermo Yard clears and once again the string of cars takes up its trek to the east. The 3837 is every bit as good an engine as its sister, the 3800, and it's only a few miles before the big-boilered racer has the train up to speed and is tossing into the morning air a feather of steam to mark its passing in the desert.

Northeast across the hills we see a gray-black funnel in the air that points earthward to another train. It isn't long before the colors in the searchlight signals change and we find ourselves meeting it at Manix. It's the 3835 and she's rolling down the siding with a mile-long string of cars behind her tender. Her hot breath blasts momentarily through our cab and is gone. Soon the caboose is by and the meet is made. Both trains have kept moving; only one has even slowed. C. T. C. is really magic on the high iron.

From a general northeast heading the track now turns due east and walls of distant hills begin to move closer on either side. We are cutting down through Afton Canyon, following the Mojave River toward its end in the sands of the desert. The tracks wind back and forth crossing the river and plunge through the tunnel just east of the station at Afton.

In the southern California flood of 1938 this usually sleepy river beside us sprang to life under the impetus of cloudbursts back in the San Bernardino Mountains and gained force from added water roaring down contributory gullies in the desert. When it reached Afton Canyon it swung unchecked from side to side and completely broke the railroad line in several places. It was six weeks before trains were running again, and the railroad made sure the rebuilt right of way was considerably more secure than the earlier route.

Almost with the suddenness of leaving another tunnel we burst again upon the desert and leave Afton Canyon behind us. The heat is reflecting up from the sands and the air that fills the cab seems hotter even than the air from the firebox. The track now stretches straight across the desert without a curve for 8½ miles. Crucero, the old crossing with the now abandoned Tonopah & Tidewater Railroad, is merely a scorched and arid spot on the middle of a sandy plain. There's a slight curve just east of Crucero and then another 8½-mile tangent.

Seven miles past Crucero the C. T. C. signal at the west end of the siding at Balch indicates the passing track, so we slow to 10 miles an hour and rumble easily across the turnout. A glance first at our watch and then at the time-card tells us we are probably waiting for No. 1.

A long, low line of smoke on the horizon appears in the southeast. Here on the desert, distances are deceiving, and the smoke at first seems to be standing still, but we are not ready to believe that No. 1 is not moving at a good rate of speed. Soon we can make out the profile of another of the new 800 class engines with the sheet metal smoke deflectors on the sides of the smokebox. She rounds the curve a half mile east of Balch and we see the plume from her whistle long before the sound reaches us.

Union Pacific order boards are normally kept at clear; the arm is raised just before the arrival of trains for which orders have been received. Here a 1944 version of the Pacific Limited approaches Ontario, slowing to receive the orders indicated by the semaphore. Ontario, 39 miles east of Los Angeles, is the approximate western boundary of the vineyard area.

Union Pacific.

The fourth section of No. 7, the westbound Challenger, clicks across the east switch at Balch under a scorching noonday desert sun. This is typical of much of the arid C. T. C. territory through which the Los Angeles Division runs between Victorville and Carp.

Each turn of the 80-inch drivers puts the train almost 21 feet nearer, and from the looks of her now those drivers must be really whirling. There's a momentary roar, a cloud of dust, and she's gone.

The switch points move over, the C. T. C. clears and again we are on our way. For a good many miles now the going will not be as easy, for we are close by that hole in the desert, the Mojave River Sink. In any direction the grade is rising. It's a steady grind up a one per cent pull and we settle back to watch the miles go by. Sands, Glasgow, and Kerens are passing tracks that stare back emptily at us from the desert floor. This is the country where weird sand shapes and colors are known as the Devil's Playground, and a slightly heat-warped imagination such as ours finds no difficulty in seeing Old Nick himself cavorting on a distant hilltop. A Y-shaped signboard rises before us and passes to the rear; the yard-limit board at Kelso.

The town or settlement of Kelso lies at the foot of the grade up to Cima. Here is a small roundhouse, a depot, a wye, some storage tracks, and a few shacks for the helper engine crews. All eastbound freights get helpers here and only the lightest of the passenger trains make the hill without assistance. One of the 2-10-2's, the 5527, is waiting for us on an adjacent yard track. Our head brakeman drops off and watches the running gear as the train pulls past him. When we finally stop by the water column, 5527 is well behind us. The caboose is cut off and allowed to roll back below the crossover. The 5527 moves ahead through the crossover, backs down on the caboose and then pulls forward against the train for the shove up to Cima.

The highball is given and the 3837 begins to move. It takes real artistry on the part of the engineers

Union Pacific.

The division's general traffic pattern is laid out by the chief dispatcher in Los Angeles. If traffic is heavy, he may order trains run in extra sections; perhaps he may run extra trains. To handle anticipated traffic tomorrow he may deadhead some equipment today. Actual dispatching is done by trick dispatchers.

to pilot these trains up and down the long grades. To watch them play lightly between throttle, brake valve, and reverse lever in handling the slack makes one think of a pharmacist carefully compounding a prescription. Forty-nine cars back the 5527 is under way and we are again blasting furiously in this business of moving freight up a two per cent grade.

Although the grade is heavy, there are few of the sharp curves and miles of twisting track usually found in mountain railroading. The curves are gentle and tangent track predominates as we head northeast toward the California-Nevada state line. In the passing track at Dawes we find the Extra 3839 West cooling its wheels on the downgrade and making its 10-minute inspection. These must be frequent in dropping down the hills, for if a wheel overheats and cracks it may result in a job for the wrecker. All westbound freight trains must stop for 10 minutes here at Dawes as well as at Chase.

The external heat, combined now with the terrific temperatures of our laboring engine, makes the cab seem like an oven. Any breeze that happens to find its way in is just as hot as the air already there, and the perspiration runs freely. We throw thunder to the passing tracks at Elora and Chase and as we swing around the big, long curve just below the top of the grade we sound one long blast for Cima.

The grade holds right into the yard trackage at Cima and the 3837 seems to give a genuine sigh of relief when at last the throttle is shoved home and the first brake application is made. We pull well down the main track toward the east end and let the helper cut off, repeating essentially the same process as at Kelso, only in reverse.

The C. T. C. signal at the east end is red and we can see the dispatcher has the switch thrown for the passing track. When we walk forward from the pilot of the 3837 away from its moist, noisy breathing we can see a black cloud of smoke from someone coming toward us up the grade. We start back to the 3837 knowing that as soon as the other man is in the clear we will be moving. As we climb into the cab we see the other train already pulling into the passing track with the 3978 on the head end. That's one of the newer series of 4-6-6-4's, somewhat heavier than the 3800 class in which we have been riding. The 3800's were originally numbered the 3900's, but in 1944, when the newer series was delivered, the older engines were renumbered.

The 3978 has no helper up to Cima from the east; only rarely do the westbound trains require assistance up the lighter one per cent grade. As soon as its caboose clears the main the dispatcher up in Las Vegas throws the switch, clears the signal, and we are ready to go. Only a little effort is required to start the CN-CUX down the grade from Cima, and the 3837 welcomes the rest. Just enough steam is required to keep the air pumps going.

With the engine relaxing, even the air outside seems cooler as we glide on down past the sidings of Joshua and Brant. Swinging around the curve above Ivanpah we can see the C. T. C. signals shining like colored stars in the daylight, and again they are telling us we have a date with the passing track. As

W. H. Thrall Jr.

Oil-burning locos must frequently have their flues sanded to remove soot, and when both firemen of a double-headed train sand at the same time result is a dense cloud of smoke. Extra 3822 West strains upgrade from West Victorville.

we nose over the switch points the fireman calls that whatever we're meeting, it's coming close. The engineer widens a little on the 3837 and moves our string into the siding quickly in order that the other train will not have to stop on the grade. It turns out to be First 43 with the 7024 on the head end and the now familiar green flags at the smokebox for a following section. Although he slows, he doesn't stop, because that dispatcher in Las Vegas is really on his toes. The moment our caboose is out of the circuit the switch behind it is thrown and the passenger train storms on up the hill. Next he opens the east switch and lets us out on the main line. We marvel at the smoothness with which the meet is made, but we are told it is normal, everyday stuff to these boys on the desert.

Rolling on down the hill, we are in a great wide basin called the Ivanpah Valley. Miles ahead we can see, at the foot of the grade, the Ivanpah Dry Lake in all its yellow shimmering flatness in the noonday sun. A spot of green in the broad expanse of dryness draws closer and the 3837 and her train begin to slow for a stop at Desert. Here again is an inspection point for all freight trains, and the 3837 uses the stop to take water and fuel. It's refreshing to walk over and rest for a moment under the big shade trees beside the water tank, and the breeze seems actually cool. Four long blasts on the chime whistle call in the flagman and once again the CN-CUX is on its way.

We are out on the rolling, mesquite covered flatlands again, moving north almost parallel with the state border off to our right. Approaching the west switch at Calada we make an easy curve to the right and by the time we have crossed the east switch we are in Nevada. Just past Roach Siding we take out directly across Roach Dry Lake and the track is on a dead level for almost two miles. This is on a long tangent extending down from Calada; there isn't a curve until we pass the siding at Borax.

Now we are climbing out of this region of dry lakes and approaching the range of hills we can see ahead. There are sags now and then, but for the most part the grade is a steady one per cent, and again the 3837 is earning her reputation. The curves become more numerous as Jean and Sutor are passed, but beyond Sutor the grade eases to the top of the hill at Erie. There's a light engine, one of the 5500's, in the passing track at Erie, probably bound for helper service at Kelso, but the 3837 has the train moving at a good clip and it's impossible to see the number.

The track winds considerably on the way down from Erie and the arcs are sharp as well as frequent. We whoosh through a cut and come out on a big horseshoe curve into Sloan, pass the depot and the big lime plant on the hill, and then slash through the cut down below the east end. Just to our left is a tunnel which was in use until 1943. At that time the track was relocated to this new route and the tunnel was abandoned. Although

it is now a few feet longer, the curves are far less sharp and a greater over-all speed may be maintained. We wind on down the mountain past Bard and come face to face with another head-in signal at Arden. Down the straightaway we can see the other train moving up the hill and he whistles for the mile just as we make it in the clear. It's Second 43 with a string of troop sleepers.

From Arden up into the hills to the west the Blue Diamond spur climbs for about 10 miles. Down from this spur come carloads of plasterboard and raw building materials, enough to require a regular daily train out of Las Vegas to handle nothing else. It makes one round trip every day, bringing the empties in the morning and then returning with the loads.

It doesn't take long for us to get back onto the main line again and take up the rhythm of our drop down the hill. Four and a half miles past Arden is Boulder Junction, where a 22-mile branch takes off to our right and drops down toward Boulder Dam. We are slowed by a yellow signal just west of the west switch while the branch train heads in, but the delay is only momentary. We take the big curve at Bracken at a rapid 45 and just 11 minutes later are coming to a stop in the yards at Las Vegas. The time is 1:35 p. m., 6 hours 15 minutes for the 171 miles from Yermo.

The 3837 cuts off and heads to the roundhouse for servicing and water, and almost at once the train is again swarming with car inspectors. Assured we have at least 1½ hours, we head uptown for lunch. The visitor to Las Vegas gets a first impression that the town is just one gigantic slot machine. In the few blocks we walk, the bank seems to be the only establishment that does not sport at least two of the popular devices on its counter.

Back in the yards after eating we find the CN-CUX just about as we left it, so we wander over to the dispatcher's office. Just south of the new modernistic depot is a small green building in which the two huge C. T. C. machines are located. There the operators sit back to back in their own room adjoining the office of the chief dispatcher. The steady march of the lights across the boards marks the passage of the many trains more

The 3531↑ helps a long string of freight up the westbound grade. Extra 5523 East↓, with merchandise and cement cars for the big cement plants at Victorville and Oro Grande, in Blue Cut, about halfway up the hill in Cajon Pass.

The 3839, last of the early series of 4-6-6-4's, takes siding at Collins to allow the first of the series, 3800, to pass. The 3839 powers the Forwarder, UP's fast westbound merchandiser.

accurately than could a whole army of telegraph operators along the line. This in itself is an important problem here, where so much of the division lies in a sandy, barren wilderness far even from the semi-civilized pathways of the major transcontinental highways. Access to the small depots and section houses along the railroad may frequently be had only over two rugged ruts in the floor of the desert. Most of the depots are no longer needed since the advent of C. T. C. and open offices have been maintained only at a few points where traffic problems are difficult.

The machine controlling the trackage from Yermo to Las Vegas, over which we have just ridden, was the largest in the world at the time of its installation in 1942, and it was on the strength of its improvement in operations that its companion was built a year or so later to control the section from Las Vegas to Caliente. The machines themselves are identical in basic design with all C. T. C. machines, and vary only in the individual railroad requirements.

It's 3:45 before the CN-CUX is ready to go again. We have gotten the 3837 back for the trip up to Caliente, but it has a whole new crew. We move down to the east end of the yard and are ready to leave town. However, the starting signal is red, so we brake to a stop just as the 3807 wheels off of the third subdivision with a long string of empty refrigerator cars. It's 3:55 on the nose when the light goes green and we actually get under way down the light grade northeast out of Las Vegas.

We make quite a run through the sag into Wann, for it's another good one per cent grade for 13 miles up to Apex. Part way up the hill at Valley a spur swings away from the main line over to the huge army air base a mile or so off to the east. The air field there is also used by the commercial air lines serving Las Vegas, seven miles back down the hill via the highway.

On up the grade we pound, vomiting a black cloud to the skies. We cant to the sharp curves just below the summit at Apex and as we round the last one we can see another train waiting for us in the siding. This time it's the 5095 with a long string of hoppers and gondolas—coal for the furnaces of southern California's industries.

We tip over the hump at Apex and start down the longer, easier grade on the other side. The 3837 is running smoothly and her side rods make a flashing pattern in the lowering afternoon sun. We nose abruptly through cuts and roll to the pull of the curves as the tonnage behind the tender gives us a shove every now and then. Garnet and Dry Lake are side tracks with which the 3837 acknowledges only a nodding acquaintance and passes without further ado.

We glide through the passing track at Crystal just as Extra 3816 West comes up the main. She is storming at the hill with what looks like a train load of merchandise, so we decide it must be the *Forwarder*. This is the westbound merchandise train giving sixth-day delivery out of the Chicago area. She, like her eastbound sister, the CN, is hotter than the proverbial firecracker and is really given the railroad.

Just east of the siding at Byron is the bottom of the grade and the bridge where we cross the Moapa River. Again the grade begins to rise, and except for an occasional short break it will hold clear through the Caliente Yard. We round the big curve at Moapa, passing first the wye for the St. Thomas branch, and then the depot.

The St. Thomas branch is one of the most profitable, from the standpoint of originating traffic, on the entire LA&SL portion of the Union Pacific. Scattered along its 17 miles are five silica mines producing the finest of silica sand used in the manufacture of glass. These mines alone send out from 16 to 20 cars a day on the little branch line train that runs daily except Sunday. But the silica mines are not all of which the branch may boast. Packing houses send out onions, celery, cabbage, and cantaloupes in their seasons, along with many thousands of young tomato plants.

The town for which the branch was named, St. Thomas, is now lying at the bottom of Mead Lake. This famous lake was formed in the valleys of the Colorado and Virgin rivers, which flow together just above Boulder Dam. St. Thomas, being close on the banks of the Virgin River, was one of the first towns to be inundated when the lake was formed, and the track below the lake's edge was, of course, abandoned. The present end of the branch is now known, logically enough, as Mead Lake.

Although the land is gently rising, the track from Moapa up through Acton to Farrier is some of the fastest on the entire division, and the 3837 really has her train wound up. In the growing twilight the C. T. C. signals seem like beacons that pass our cab windows at regular intervals. Halfway between Farrier and Rox we cross Meadow Creek for the first time. A mile and a half farther we cross it again, and in another thousand feet cross it once more.

This innocent-looking thread of water has for years been a trouble spot for the railroad. Its history is lurid. In the spring of 1907 enough water came down Meadow Creek to put the railroad out of operation for about eight weeks between Caliente and Carp, down toward the foot of the narrow valley. Four years before, when the engineers had built the original line, the old settlers in the valley had told them, the Nevada Indians had told them, and the high water marks on the walls of the canyon should have told them that the placid creek they saw winding down the canyon could assume all the aspects of a mighty rushing river. But they hadn't heeded the warnings before and they now ignored this last one from even the water itself. Back on the banks of the creek went the rails and ties, and for a few more years their luck held.

Then on New Year's Day of 1910 it rained. That night down Meadow Creek Valley came a growing torrent of water that threatened to take along anything in its path, and the railroad proved to be no

The main lines of the Union Pacific and the Southern Pacific parallel each other for several miles east of Pomona. UP 3839 waits on the siding at WO Tower while, a hundred feet away, SP 4430 wheels past with the first section of the eastbound Sunset Limited. The lines leave each other east of Ontario. Twenty-six miles farther east, near Colton, they cross each other.

exception. Section Foreman Schrader at Elgin stayed to fight the battle as long as he dared, then packed his family and took to the hills. There on a Nevada hillside during a devastating flood his wife gave birth to a baby. That baby was five months and 11 days old before another through train moved through the canyon. This time, though, it was on tracks well up the sides of the valley, out of reach of future floods. The engineers had given in to nature.

In the flood of 1910 the SPLA&SL lost 125.9 miles of right of way, most of it between Caliente and Moapa. For almost the entire time a passenger train sat rusting on the siding at Kyle, one of the few isolated spots left comparatively untouched. For years afterward passengers pointed to rails making crude semicircles up out of the silt and mud at the bottom of the canyon but failed to realize their significance. Neither did they realize that buried under that selfsame silt and mud were whole freight cars, swept from their tracks by the wall of water, only to be followed by the tracks themselves. But the railroad men learned their lesson, although it had been taught the hard way.

We are now close to the west switch at Rox and are moving slowly as we cross it, for the C. T. C. has again ushered us into the siding. While the engine is taking water we stand just in front of the pilot admiring the early evening on the desert. A headlight swings around the curve above Rox and starts down the grade toward us. It's No. 37, and the 7865 is really giving it a ride. As it passes, the lights in the 12 cars run together, making an almost continuous luminous band along the side of the train. The siding signal doesn't clear after No. 37 runs, but we are not surprised, for No. 7 is due quite close behind it. In a few minutes another headlight appears to repeat the performance of No. 37's. As No. 7 draws close we can see green lights denoting the not-unexpected second section. We are through taking water now, and are half expecting the signal to clear and let us get a little farther before Second 7, but apparently it is close on the block of the first, for the dispatcher holds the signal at red. It isn't long before a third headlight gleams around the curve and straightens out. Second 7 runs and immediately we are on our way.

Meadow Creek stays on our left now for several miles as we climb past the railroad's gravel pit at Hoya and begin to wind on the numerous curves above the banks of the creek bed. We make two more quick crossings of the creek just below Galt, and two more just above. The desert night has closed in around us now and although the thousands of stars overhead are unbelievably brilliant, there is such absence of light on the ground below that landmarks are virtually invisible. The continually roving finger of the headlight picks up enough for the crew to see and recognize, but to the uninitiate the train might as well be in a tunnel. We whistle for Carp and, since the grade has grown stronger, come to a stop by the simple expedient of shutting off the steam.

The 5008 pulls out onto the main ahead of us and backs down to couple on ahead of the 3837 for the last lap. Once under way, the combined exhausts from the two engines make wonderful overtones

The westbound Los Angeles Limited passes the 3839 on the siding at WO Tower (also see page 55). UP trains are easy to identify by means of the number wings at the top of the boiler. The Limited is westbound as train 1, eastbound as train 2. Extra trains derive their numbers from the number of the engine, sometimes preceded by an "X."

tossed back by the now crowding hilltops. Throttles wide and reverse levers down in the corner, the two big engines start walking the train up the valley. At Cloud, Extra 3810 West is in the clear for us and in the siding behind his caboose is the 5515, a light engine going back to Carp, probably after a helper trip up the hill.

The signals call for the siding for us, however, at Leith, five miles farther. Our speed on the grade is such that we make the turnout without slowing and do not slacken speed until we are nearing the east end of the passing track. The signals ahead on the main line show green so we know that we are in here to be passed rather than to meet an opposing train. Soon the thunder of another exhaust sounds behind us and No. 4 [the *Transcon*, now discontinued] pounds by with one of the 800's. In all probability it is the same engine we met on No. 3 at Yermo early this morning. Since there is not sufficient time for these engines to go into Los Angeles on No. 3 and come back on No. 4, they are frequently cut off in San Bernardino, serviced at the Union Pacific roundhouse there and put on No. 4 a few hours later for the return trip.

After No. 4 runs, the block clears on the main line again, but the dispatcher is still holding us, this time for No. 44. Almost the instant he is clear of the signal circuit the dispatcher throws the switch and the 5008 and the 3337 again take up their battle. Just below Kyle we churn out across Meadow Creek again and almost instantly burrow into a tunnel, the longest of several on the division, this being 1096 feet in length. At the other end of the tunnel is the siding at Kyle.

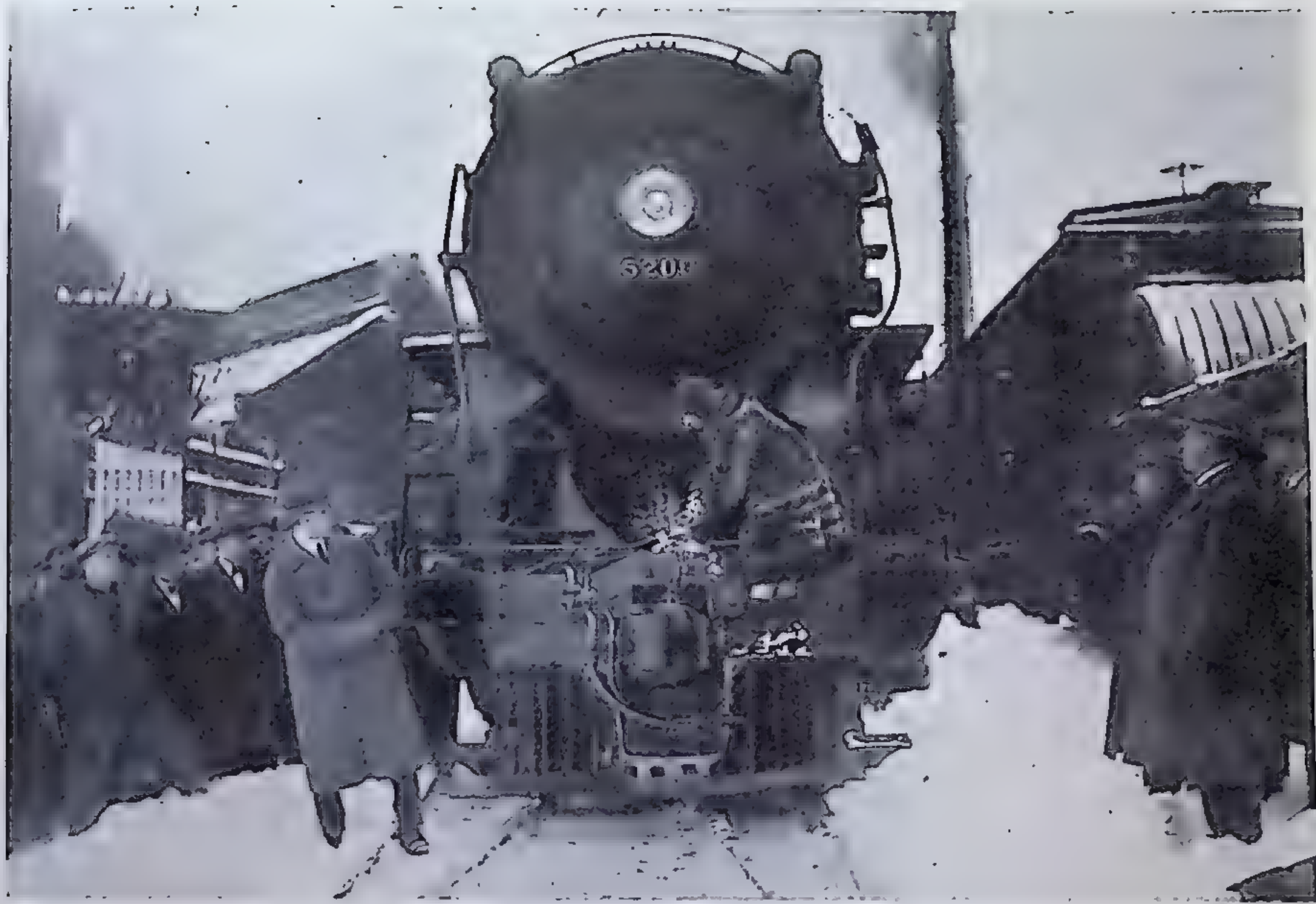
There is more curved track now than straight by a considerable margin, and six- and eight-degree compound curves abound. The canyon is narrower here in the upper reaches, and the railroad found it difficult to find a place for its tracks and still keep them above any possible level the water could attain. Pile trestles cross side arroyos and canyons, while through truss and plate girder bridges cross the main canyon. Between Elgin and Boyd another tunnel is approached on a series of sharp curves. Most of these tunnels are built to accommodate double track should the railroad ever decide to put it in on this subdivision.

Overhead the stars lose themselves behind a sudden rolling of clouds and in a moment the first spatterings of rain appear on the little windows in the front of the cab. A lightning flash brightens the track for an instant, and in its light we can see ahead of us the tunnel just below Stine. As we emerge from the other end there is a clap of thunder 10 times louder than the roar of our two locomotives. Simultaneously a few rain drops find reinforcements and there is a veritable cloudburst. Almost as soon as it starts, however, it is gone. Only a few warm drops remain as we round the curves at Etna, and by the time we call for the mileboard at Caliente the stars are again out in all their glory. Just a summer thunder shower.

The yards at Caliente are on almost as heavy a grade as the tracks which approach from the southwest and climb away on the east. They are near the upper end of Meadow Creek Valley and are little more than a wide spot in the main highway, to anyone other than a railroader. North of Caliente runs the Pioche branch, while the main line of the Utah Division swings east out of town and then southeast, following Clover Creek.

It's 9:40 p.m. when we finally come to a stop, just 25 hours 40 minutes from Los Angeles, an over-all time that not too many years ago was considered good for passenger trains. Yet a good portion of the time was consumed in yards and at inspection and operating stops along the way. Actual running time for these fast freights on the Los Angeles Division is often as low as 16 hours for the 460-mile run, a phenomenal pace considering the terrain covered.

Railroads today realize that their biggest customers, the freight shippers, appreciate the rapid schedules of fast freights such as the *Forwarder* and the CN. Smart officials are tailoring their future plans to satisfy them. Not only are running times being cut, but yard movements are being speeded up through the use of yard communicating systems such as loudspeaker networks and two-way radio between yardmaster and switching crews. Competition has never been more keen in transportation than it is today.



Collection of William C. Moore, 99 John St., New York 7, N. Y.

February marked the 20th anniversary of New York Central's famed Hudson type locomotive. Here the first of Class J-1 is christened shortly after rolling out of the American Locomotive Company plant at Schenectady. The Hudson evolved from the Pacific type. NYC had been building heavier and heavier Pacifics and finally reached the point where a bigger boiler and larger grate area demanded the addition of two more wheels to the trailing truck to carry extra weight at rear of the engine.

Fast Time Under Difficulties

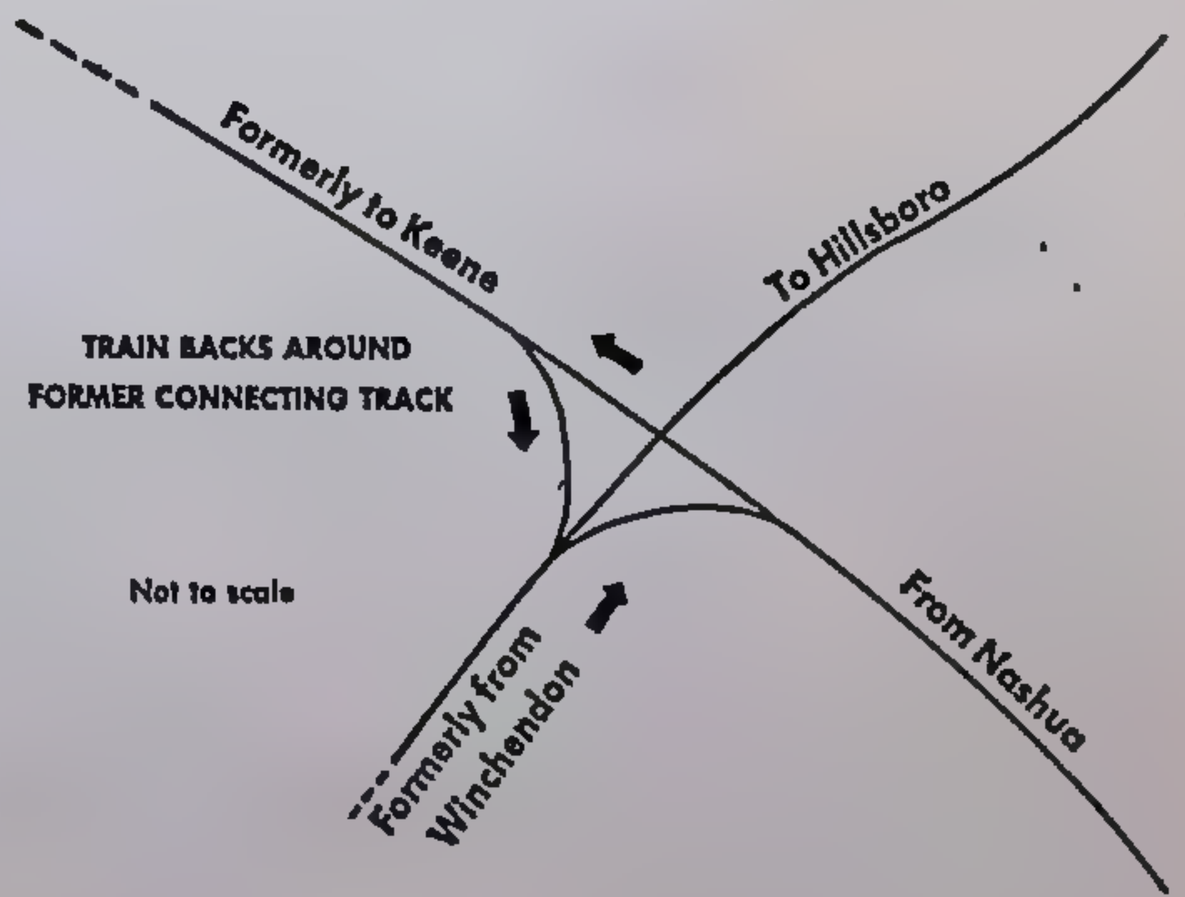
One day during the summer of 1879 a carload of tourists was by error left at Merced, Calif., on the Visalia Division of the Central Pacific Railroad, 57 miles south of Lathrop. Engine 107 was sent from Lathrop to rescue the stranded tourists. On the way it lost 10 minutes stopping for water, 10 minutes with a hot box, at Merced it spent 15 minutes in turning and waiting for orders, and on the return trip it lost 20 minutes in disconnecting one side of the engine due to a bent valve stem. With all these drawbacks and running the last 30 miles with only one cylinder, the round trip of 114 miles — 57 light and 57 with one car — was made in 3 hours 15 minutes for an over-all average of 35 miles an hour. Actual running average was 48.86 miles an hour.

Freak Operation

Hillsboro, N. H., is served by a daily B&M way freight from Nashua which makes a wye turn in the middle of the run both coming and going. This unique operation takes place at the former station of Elmwood, which was the junction of two lines, one joining Hillsboro and Winchendon and the other running from Nashua to Keene. Now the station is gone and the lines have been abandoned south and west of Elmwood. Rather than go to the expense of building a curve to connect the two remaining segments, westbound trains are run past the crossing, backed over the old connecting wye track and then continued north on the Hillsboro line.

Section hands balked at this roundabout way of making a turn and built a wooden platform in the center of the crossing. To make the turn they simply remove their speeder from one set of rails and put it on the other.

BOSTON & MAINE at Elmwood, N.H.



Switching at West Oakland

Busy SP terminal works five parallel lead tracks at a time

BY NORMAN B. LINDSAY

Five switch engines work side by side on five separate lead tracks paralleling each other at the west end of the Southern Pacific's West Oakland (Calif.) yard, cramming into a scant 125 foot width the movement of a variety of trains, both freight and passenger, both inbound and outbound.

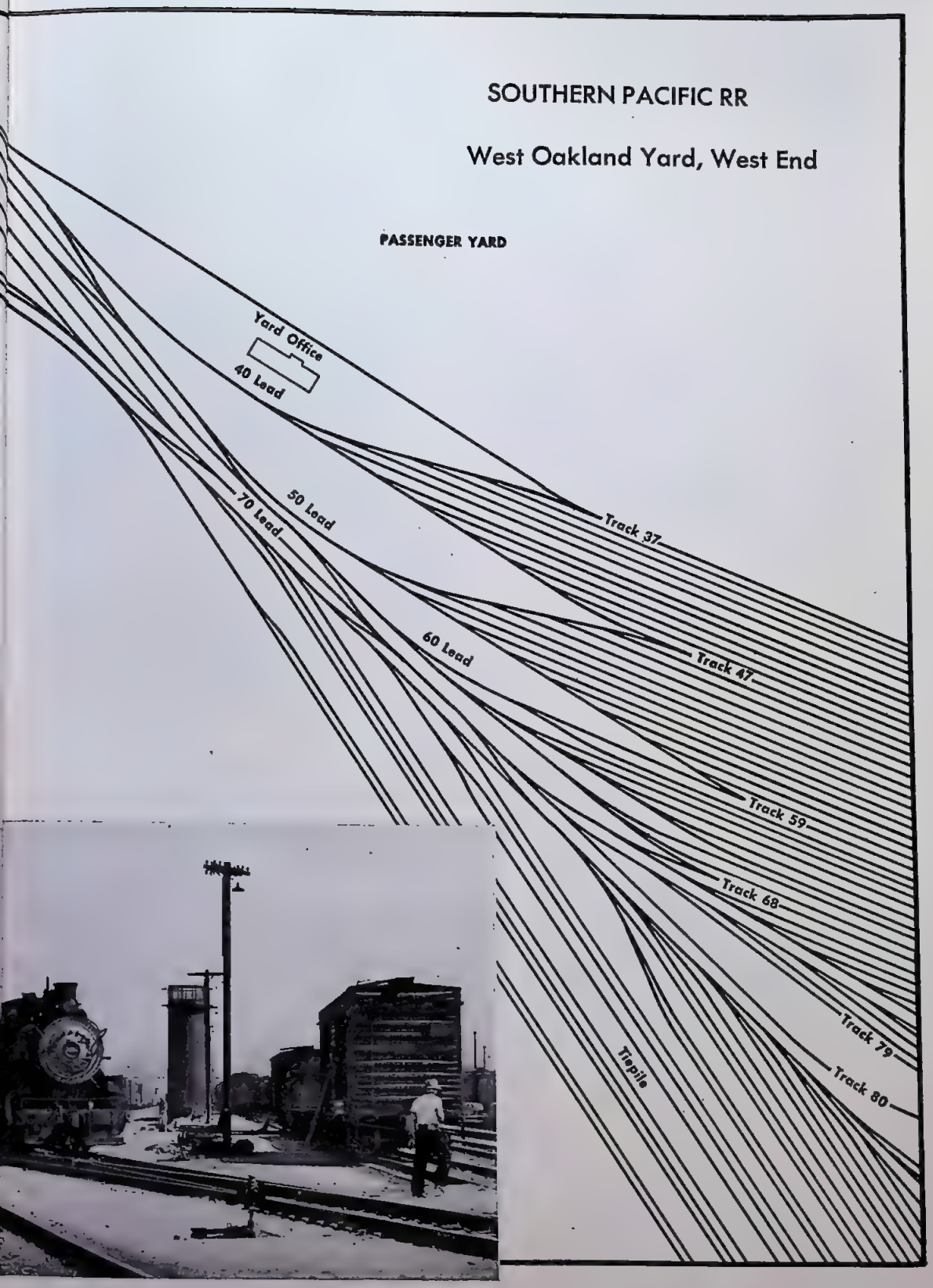
The five leads fan out a short distance from the yard office to serve 66 tracks. The lead nearest the office is designated as the "40 lead," serving tracks 37 to 47 inclusive which comprise an inbound and outbound yard for extra passenger and freight equipment. This includes deadhead trains, troop trains after unloading at near-by military installations, and equipment received from Santa Fe and Western Pacific transfers. Here the cars are stored or lined up for further movement. Pullman cars are distributed from the SP yards at West Oakland, and Pullmans requiring shopping must also be handled through here before going on to the Pullman shops at Richmond on the SP main line. The *Central California Merchandise* is also handled on the 40 lead, as are three local freight trains.

The 50 lead, handling tracks 47 to 59 inclusive, is famous for the number of cars it rolls down the ladder in an eight-hour period to the inbound or break-up yard. Diesel switchers now handle this lead, but old-timers claim that the lead is no longer as fast as it was in the old days when such legendary engine foremen as John Stalder and Mollie Jensen used superheated 0-6-0's to chop up the inbound trains. Jensen is now assistant terminal superintendent.

Fanning from the 60 lead are tracks 59 to 68, handling most of the cars for local delivery. San Francisco trains are made up on Track 60, the *Richmond Cannonball* uses Track 61, the *Emeryville Cannonball* uses 62, and 63 is used for Santa Fe delivery. Track 65 is that nightmare of all big terminals, the scales. Track 66 is the "for now" track; 67, the Western Pacific transfer; 68, the transfer to the 70 lead.

To this latter lead are assigned tracks 69 to 79, handling everything from rock trains to Army and Navy trains. Track 79 is used for cars destined to the Market Street district, which includes team tracks, icehouse, and many industries. Track 80 is a running track from one end of the yard to the other and also furnishes access to the caboose track.

The fifth lead services the "tiepile," an empty yard which receives freight empties and cleans them for special lading.


SOUTHERN PACIFIC RR
West Oakland Yard, West End
PASSENGER YARD
Yard Office
40 Lead
50 Lead
70 Lead
60 Lead
Track 37
Track 47
Track 59
Track 68
Track 79
Track 80
Tiepile

American Locomotive Company.

An entire train of locomotives built by the Montreal Locomotive Works, subsidiary of American Locomotive Company, awaits removal to ships for transfer to France. They are the first consignment of an order for 100 steam locomotives for the French National Railways and are of the 2-8-2 type. French railways were badly damaged during the war; these engines will help rebuild the depleted roster of motive-power equipment.

First U. S. Numbered Patent Was for Locomotive

Although the United States has granted patents on inventions since 1790, it did not start numbering the patents until 1836, when Patent No. 1 was issued to John Ruggles, United States Senator from Maine, on a device "designed to give a multiplied tractive power to the locomotive and to prevent the evil of the sliding of the wheels." Senator Ruggles' invention was a gear-like arrangement for locomotive wheels and railroad rail which would mesh for grades. However, about the same time the patent was issued, a locomotive startled the world by pulling a train of cars up a grade without the use of outside cogs or gears, so the senator's invention was outmoded before it could be used.

Comparative Costs

Per-passenger cost of railroad passenger terminal service in many instances is equal to the revenue derived from carrying a passenger 50 to 100 miles. Railroads build and maintain their own terminal facilities. Air lines, on the other hand, are furnished airports at public expense. Railroads likewise maintain their own tracks at a cost of one-eighth or more of their total revenues. Government-built waterways are maintained at a public expense that averages twice as much per channel mile as it costs to maintain a mile of railroad. When a shipper pays for freight service on an island waterway he doesn't pay the cost of keeping the channels open. The taxpayers do that. And the railroads are taxpayers. More than nine per cent of the total 1945 revenue of Class 1 carriers was paid in taxes to Federal, state, and local governments. Railroads thus help to subsidize their own competitors.

Milk on Rails

Swiss households receive the largest part of their milk supply only after it has been transported by railroads. The huge milk consumption in big cities like Zurich, Basle, Berne, and others requires a carefully worked-out plan whereby special depots are established for the collection of milk in various parts of the country, to which it is brought by the producers. From these depots, the Swiss Federal Railroads carry the milk in a daily average of 329 freight cars. It is always shipped as "Fast Express." By no means the smallest part of the service is the extraordinary low freight rates charged. Since 1904, the charge for carrying one liter of milk (slightly less than a quart) for 100 miles has been about six-tenths of a cent.

Blue Signal

Most restrictive of all railroad signals is the blue flag or blue light which is placed at each end of standing equipment. The signal means that men are working on the equipment and that it must not be moved as long as the blue signal is displayed. The blue flag or blue light must not be removed by anyone other than the man who placed it there in the first place. It is his responsibility and his alone to remove the flag when it is again safe for the cars to be moved.

ENTRAL PA
140

British Columbia Electric

One of the prettiest interurban trips in Canada is over the 76-mile Fraser Valley Line of the British Columbia Electric. Photo shows Central Park local followed by a three-car Chilliwack train in Vancouver. The latter train makes no stops between Vancouver and New Westminster, a distance of 12 miles, but calls at all stations in the Fraser Valley. Reminiscent of the old-time interurban is the Friday "market special" to Mt. Lehman a little over halfway to Chilliwack. The BC system also features baggage, milk and express trains daily except Sunday over the Fraser route. Photo by W. C. Janssen, District Transportation Office, P. O. Box 2270, San Antonio, Tex.

"Today's magic carpet travels on a railroad track"

"This afternoon the children and I have been planning our vacation trip. We have all of this wonderful country of ours to choose from, and the railroads can take us to any far-away place we pick. Like a regular magic carpet.

"What's more, when we go by train we know we'll get there—swiftly, safely, comfortably—no matter what kind of antics the weather man thinks up. Train travel is inexpensive too—especially since we get round trip rates and the children ride for half-fare.

"All year long, the railroads bring the world to my door . . . to help me run my house. And then, at vacation time, they turn around and put all America within easy reach!"

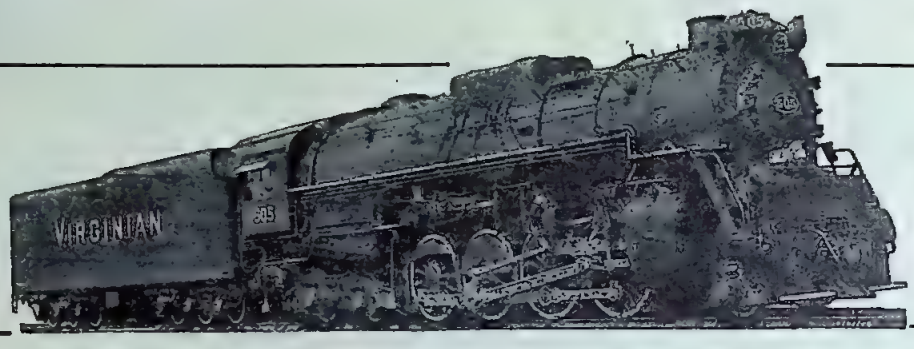
When you plan *your* next vacation, remember that the day-and-night, all-weather regularity and dependability of the railroads can help make your holiday the best you've ever known.

It will start the moment you board your train. You'll begin to shed tension as you watch a continuous moving picture unroll beyond your window, in natural color and featuring close-ups of the world's most satisfying scenery. You can relax in your comfortable seat. You'll enjoy plenty of space to move around in. And all the while—as you read or rest or sleep—your train will be taking you easily, smoothly, dependably—like a regular magic carpet—wherever in all America you want to go.

ASSOCIATION OF **AMERICAN RAILROADS** WASHINGTON 6, D. C.

IN PARTNERSHIP WITH ALL AMERICA

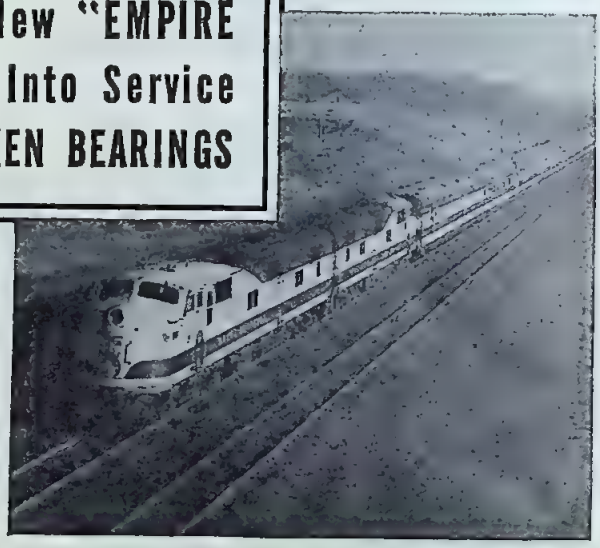
it takes more than S-P-E-E-D



Coupled with today's need for speed is the problem of moving a large volume of traffic. The Virginian has realized this and is meeting these demands with a fleet of modern Lima-built 2-8-4's capable of moving freight at speeds closely approximating passenger schedules.

LIMA LOCOMOTIVE WORKS LIMA LOCOMOTIVE WORKS INCORPORATED **INCORPORATED, LIMA, OHIO**

Great Northern's 5 New "EMPIRE BUILDER" Trains Go Into Service With All Cars On TIMKEN BEARINGS



Another great forward step in passenger transportation was taken on February 23rd when the Great Northern Railroad's ultra-modern streamlined train "Empire Builder" went into operation on a daily 45-hour schedule between Chicago, the Twin Cities and Pacific Northwest.

Five 12-car all-accommodation trains comprise the "Empire Builder" service. Four of the trains were purchased by the Great Northern and one by Burlington Lines. Operation of all five will be Burlington between Chicago and St. Paul and Great Northern between St. Paul and Seattle. All of the cars in all five trains are equipped with Timken Roller Bearing journals.

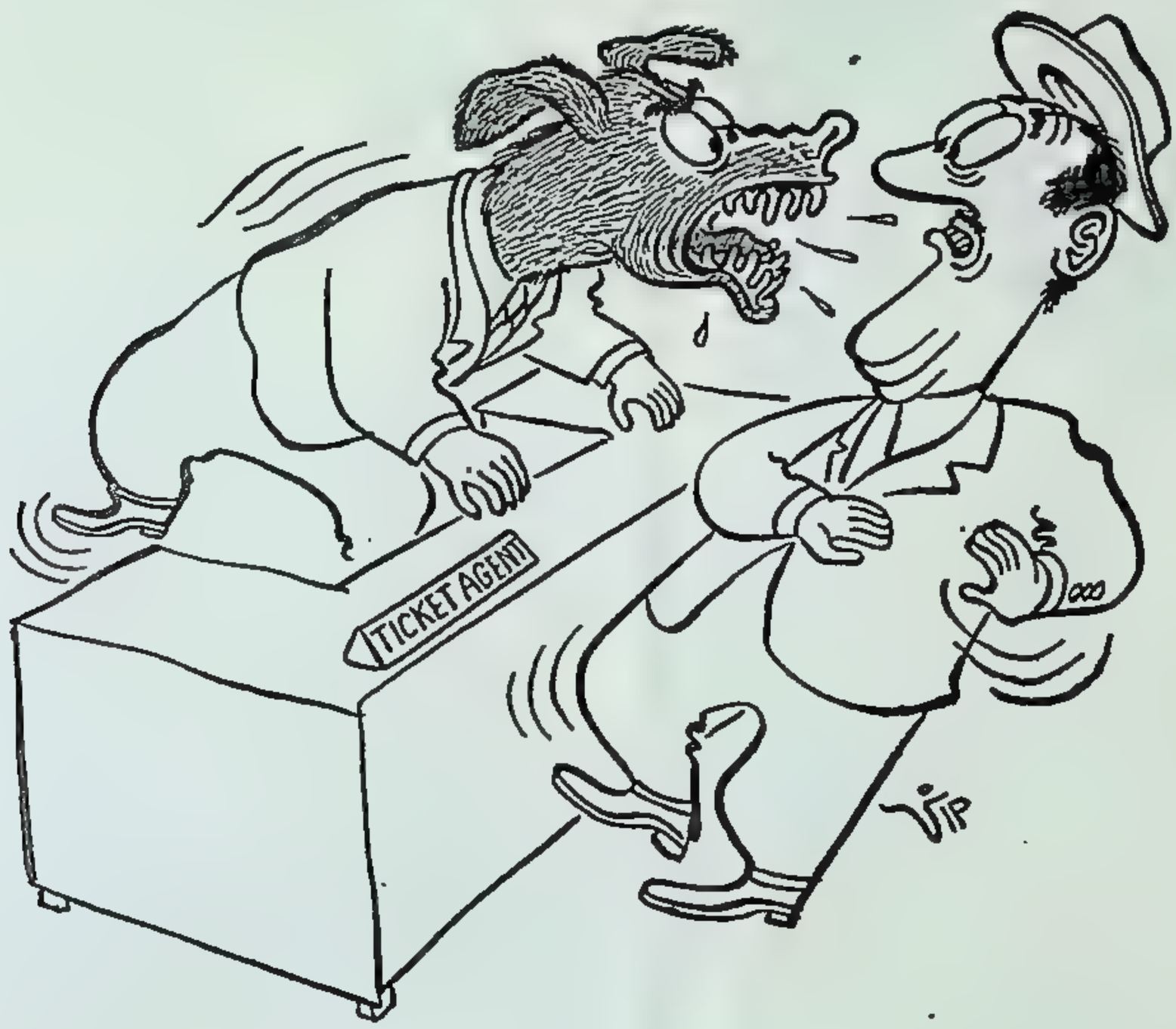
TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
RAILWAY ROLLER BEARINGS

THE TIMKEN ROLLER BEARING COMPANY, CANTON 6, OHIO

Whatta ya mean, *friendly* ?

Just saying a thing is so doesn't make it so. We know that. Occasionally somebody will question our right to call ourselves the *friendly* Southern Pacific.

"How can you say that," he'll ask, "when one of your ticket agents practically *barked* at me once?"



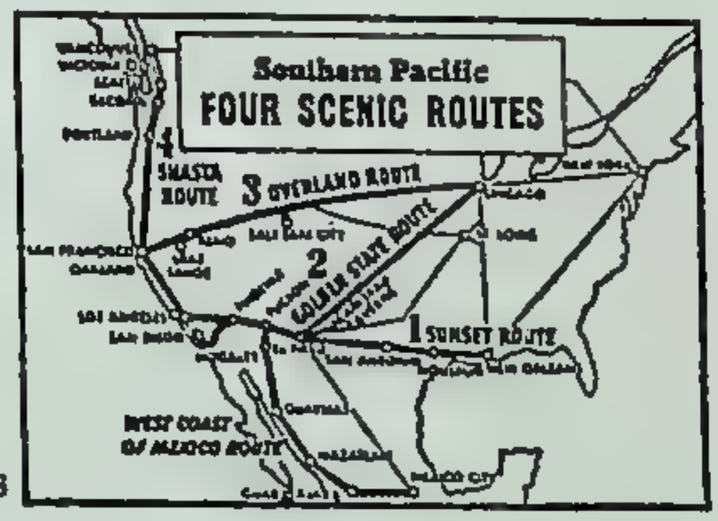
Well, one swallow doesn't make a summer, and when you have 90,000 people running a railroad, you're bound to have some quick tempers and cases of stomach ulcers among them.

We wouldn't be human if we didn't slip up once in a while, even though we try very hard to prevent slips.

We call ourselves a friendly railroad because you seldom see a Southern Pacific engineer who doesn't wave at folks, or a conductor who doesn't like to pat children on the head and give them a fist-full of discarded seat checks to play with. Or a Southern Pacific man or woman who won't go out of his or her way to perform an act of human kindness above and beyond the call of duty.

If you're planning a trip to California, we'd enjoy having you as a guest on our trains—trains like the *City of San Francisco*, the *Lark* and the *Daylights*, which we think are just about as wonderful as anything on wheels. Our service now is much faster and better than before the war.

The little map shows where we go ☞



S·P **The friendly Southern Pacific**

L. C. Ioas, Passenger Traffic Manager, 310 S. Michigan Ave., Chicago 4, Illinois

RUNNING EXTRA

Anyone who has tried to control his own household expenses in these times of rising prices can appreciate what a task Henry Kirtland's job as comptroller of Kalmbach Publishing Co. must be. Imagine yourself a polygamous husband (no, Henry isn't one, but just imagine it) with each wife presenting her monthly bill for household expenses and each crying for new shoes for the children. That's a situation which might be likened to Henry's position, for each department head has his own budget, and each is finding it ever more difficult to remain within limits as the prices of paper and ink go up, as engravings go up, as wages go up. Even the cost of sweeping compound has gone up!

Like all good husbands, Henry helps his multitude of "wives" as best he can, making suggestions as to how to cut expenditures here so as to have a few more dollars available for purchases there. Occasionally he must make adjustments in the budgets, too, and then see what he can do about earning more money to meet the increased expenditures. He recently went into a huddle with the board of directors (of which, as secretary-treasurer, he is one) and the board came up with the price increase which is effective with this issue. It was inevitable. But Henry and the other directors are proud that they were able to withhold the price increase as long as they did. It was Henry's careful watching of expenditures which permitted them to do so.

Henry's job is one series of figures after another. Ensconced in his private office on the second floor, he adds hours, reams, ink, engravings, power bills, rent, taxes, insurance, transportation, pencils, typewriter ribbons, and even first aid and other incidentals, and comes up with a per-page cost of the magazine which enables the editors to judge the value of an article or photograph. The net production cost of one page of TRAINS, incidentally, is $102.91. Henry says so.

"Hank" has been with the company seven years. He started as a draftsman.

Railroad

Change of Gears in One Day

I am now a Diesel man but nevertheless an ex-tallow pot and I still love the steamers. I naturally gave close attention to the article on Electro-Motive's F-3 in December TRAINS. . . . I'd like to see the shop that could change the gear ratio in even one unit a day, let alone change all 12 axles on a three-unit job. It can't be done. To change gear ratios, you have to change a pinion on each traction motor and a main gear on each axle. If the railroad has the foresight to have enough spare axles (complete with wheels and the new gear) for the entire three-unit locomotive, the job is somewhat simplified. Of course, each motor still has to be removed from its axle, the old pinion pulled, the new one installed, and the motor mounted on the new axle. . . . I don't think the nut-busters work quite as fast as Electro-Motive hopes.

S. B. Avery, Atlanta, Ga.

[Electro-Motive assures us that it is entirely possible to change over a three-unit locomotive in 24 hours in a modern, well-equipped Diesel shop and with proper preparation, which includes having the spare axles ready with new gears. The company adds: "Many Diesel shops have vied for the record of dropping a traction motor with wheel, axle, and gear assemblies and re-installing a spare in the shortest possible time. The best record we know of to date for this job is 55 minutes." — *Ed.*]

Oldest Short Line Route

Readers of Horace D. Runey's delightful article on the Bath & Hammondsport (December 1946 TRAINS) might be interested in the fact that the B&H, itself no babe among small roads, operates over the nation's oldest short line route. In his "Book of the United States," published in 1842, Grenville Mellen (an authority I have found to be generally correct) lists the five-mile Bath Railroad, connecting Bath and Crooked Lake (Lake Keuka), among railroads operating in New York in 1839. Perhaps the Bath, like the storied Catskill & Canojoharie, was a horse-operated line.

William S. Young, Editor, *The Crown Sheet*, 23 Parker Ave., Cranford, N. J.

Wants More Relaxation, Less Speed

I propose that all new and better trains provide more space for fun and relaxation, and that the railroads stop worrying so much about fast schedules. All who remember the principles of kinematics know that traction and safety go down appreciably as speeds go up; and the strains involved in fast schedules are bound to shorten the lives of train crews even if they can keep their monsters on the tracks. The much-hurried traveler will take a plane anyway.

Gilbert Betancourt, 215 S. Oxford Ave., Los Angeles 4, Calif.

Early Coast-to-Coast Trains

Tower's Excursion car (January TRAINS) was not the first car to travel from the Atlantic to the Pacific. In May, 1870, the Boston Board of Trade special went from Boston to San Francisco via Oakland, and was the first *through* train from the Atlantic to the Pacific, with 131 passengers who read a daily newspaper, the *Trans-Continental*. Jarrett & Palmer's special Pullman train, the *Lightning Express*, went from Jersey City to San Francisco via Oakland ferry in May, 1876, making the trip in 12 hours less than the advertised four days' running time.

Peter D. Vroom, 1543 E. 61st St., Chicago 37, Ill.

From a Ferroequinologist

Whenever I am asked by anyone what my hobby is, I reply, "Oh, I'm a *ferroequinologist* (student of the iron horse)."

Emmette T. Gatewood Jr., 48 Westmoreland Pl., Richmond 21, Va.

Mail

New Suburban Trains

Not all of the new trains are de luxe long-distance streamliners. The Lackawanna has just added three new multiple unit electric trains in the New Jersey suburban area. One, a midnight express westbound from Hoboken for the after-theater traffic, is said to be the Lackawanna's first non-commuter suburban express and comes at a time when bus companies have introduced express service in the area. Elsewhere in New Jersey the Susquehanna operates fast streamlined rail cars, successfully competing with established bus routes. Not to be outdone is the Jersey Central with a Diesel-powered suburban train.

William Betts, 24 Molter Pl., Bloomfield, N. J.

It's the Train That Counts

At first the quibbling among steam, electric, and Diesel locomotive fans amused me, but of late I have been getting tired of it. TRAINS is a magazine for *railroad* fans, and its job is to present the railroads as they are. . . . The steam locomotive, the electric locomotive, the Diesel locomotive — they all have their advantages and disadvantages in their various applications. After all, it's the *train* that counts.

John J. McCartney, Rte. 1, Box 188, East Lansing, Mich.

Movie Was Right After All

Some time ago I saw a movie in which a conductor raised the trap before opening the car door. I thought this was incorrect, and three or four other people agreed with me that the car door has to be opened first. But today I was down at the station and saw a Milwaukee Road coach that cannot be used at a high-level platform. The door extends one step lower than the vestibule floor, and cannot be opened until the trap is raised. It just goes to show you, doesn't it?

Howard Gruenberger, 2910 N. Fratney St., Milwaukee 12, Wis.

Goldsboro Not in Service

The old river steamer *Goldsboro* has been laid up and her machinery taken out, says Captain Fred Way, an active river pilot and well-known steamboat historian. In the *Journal of the Steamship Historical Society of America*, Captain Way states: ". . . So, in 1945, the old *Goldsboro* still held all honors for being the oldest Mississippi hull afloat, albeit her active days were ended." Now in the compilation "Railroad Interest in the New Orleans Area" in January TRAINS, you have put her back in service again. Interesting if true!

James Wilson, 138-30 Northern Blvd., Flushing, N. Y.

In Reply to Mr. Davis

As if in answer to the letter of James H. Davis in February TRAINS, the Great Northern, when it exhibited the new *Empire Builder* here in Minneapolis, also had the old *Wm. Crooks* train on display. It was built in 1861.

Lee J. Morrison, 5309 Washburn Ave. S., Minneapolis, Minn.

[Mr. Davis' letter expressed his desire that railroads exhibit old-time equipment alongside new equipment on display. — *Ed.*]

Station Identified

In "Electric Railroading" (October 1946 TRAINS) is a photo of an unidentified station on the Piedmont & Northern. This station is Greer, S. C., about midway between Spartanburg and Greenville on the P&N. Greer is also on the main line of the Southern between Washington and Atlanta.

R. De Foix Crocker, Spartanburg, S. C.

SECOND SECTION

TRAINS Photo Bulletin No. 4 is now ready for distribution. Superseding all previous issues of the bulletin, it gives pertinent information about our rates of payment, what type of photographs are wanted, etc. If you have any desire to become a contributor to TRAINS, send for a copy of the bulletin. It's free.

* * *

Whoops-we're-sorry department: Don Furler, 94 W. Main St., Glen Rock, N. J., took the photograph on page 12 of Trains for December. Somehow he was not credited. . . . The March cover photo should have been credited to Gene LaVancil. . . . The "L&N freight" pictured on page 12 of the February issue was not L&N, but Nashville, Chattanooga & St. Louis. It is a first cousin to L&N, which owns more than 70 per cent of NC&StL stock.

* * *

Comes spring, and once more travelers will be plagued with the necessity of figuring differences between standard and daylight saving time. A lot of inconvenience can be avoided if, when making appointments in distant cities, you state definitely the time of your arrival and mention specifically that the time given is "railroad standard time." If your appointment happens to be in a city like Battle Creek, Mich., which is the dividing point between Eastern and Central standard time on the Grand Trunk, you had better mention "Eastern standard" or "Central standard" time, for the Grand Trunk arrives and departs on both, depending on which direction you're traveling. The New York Central, on the other hand, uses Eastern time exclusively in Battle Creek, changing over between Michigan City and Niles, Mich.

* * *

When you move, be sure to send us your new address at least four weeks in advance. The post office does not forward magazines unless you leave postage for that specific purpose. Send both your new and your old address, please.

* * *

For your library: S. Kip Farrington Jr.'s book "Giants of the Rails," accurate drawings in full color (by Glen Thomas) and descriptions of modern locomotives of every type on the major railroads of the United States, together with details of train, hand, flag, lamp, whistle, and automatic signals. Page size, 12" x 10". Postpaid, $1.

KALMBACH PUBLISHING CO.

1027 N. 7th St., Milwaukee 3, Wis.

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IT'S A MARVEL
IT'S B&O's

Cincinnatian

the first de luxe ALL-COACH daylight streamliner between

BALTIMORE-WASHINGTON
CINCINNATI

Serving Martinsburg, Keyser, Grafton, Clarksburg, Parkersburg, Athens, Chillicothe

LOOK AT ALL THESE
OUTSTANDING FEATURES OF THE
CINCINNATIAN

- Streamlined
- Rubber-cushioned trucks for easy riding
- De Luxe Reclining-Seat Coaches
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- Ultra-modern Observation-Dining-Lounge Car, with curved glass rear-end windows
- Venetian Blinds with finger-tip control
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- Movable, over-stuffed chairs in Lounge Cars
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- Completely air-conditioned
- Public Announcement System in every car
- Colorful interiors...each car distinctive
- Electric Coolers for drinking water
- Radio for instantaneous news broadcasts and entertainment
- Fluorescent lighting
- "Sleepy Hollow" reclining seats, with adjustable backs and foot rests
- A light at each seat, individually controlled
- Wide, new-style luggage racks
- Easy-to-Open Stainless Steel Doors, with porthole windows
- Writing desks, with special train stationery
- Powerful Pacific-type Steam Locomotive
- Telephone Service between Conductor and Engineer
- Roller Bearings throughout
- Modern lavatories
- Current magazines

REGULAR COACH FARES!
SEATS RESERVED WITHOUT EXTRA CHARGE

BALTIMORE & OHIO RAILROAD

New Railroad Books

JOSIAH WHITE, PRINCE OF PIONEERS, by Eleanor Morton. 300 pages, 6½" x 9½". $2.50. Published by Stephen Daye Press, New York.

The biography of a Quaker hardware merchant in Philadelphia who became interested in the problem of transporting anthracite from the Lehigh Valley. He was one of the pioneers in constructing canals and railroads in the Lehigh and Panther valleys of Pennsylvania and in building inclined planes for coal haulage. It gives a good picture of the era although it is not very well integrated.

ROADWAY AND TRACK, by Walter F. Rench. 350 pp., 6¼" x 9", $5. Published by Simmons-Boardman Publishing Company, 30 Church Street, New York, N. Y.

This third edition of Walter F. Rench's standard work on roadway and track is completely brought up to date and illustrates, in text and photos, modern methods of railroad maintenance. The author writes with experience and knowledge on all phases of track and line work. The simplicity and clarity of the context, together with many subheadings and an adequate index, make the information readily available to the reader. Engineering drawings and tables broaden the book's usefulness for reference.

RAILROADS AROUND
NEW YORK CITY

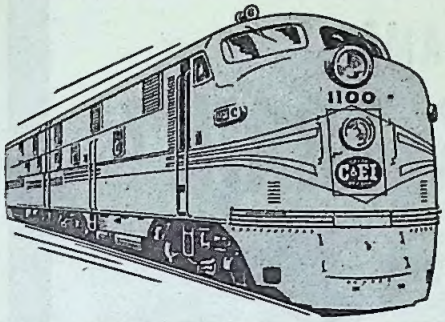
BY
G. W. O'CONNOR

OVER ONE HUNDRED NEW PHOTOS
WITH
COMMENTS OF INTEREST

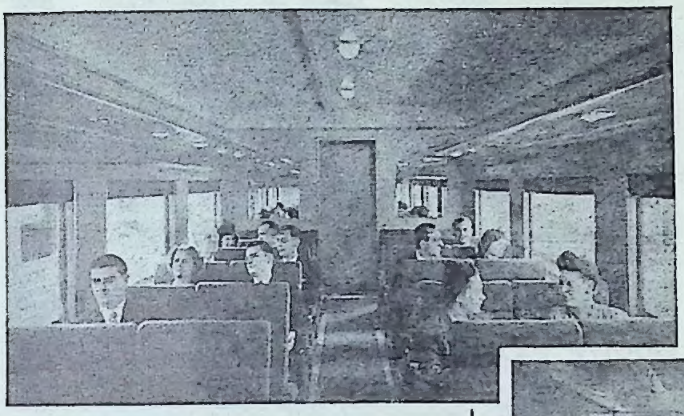
Stratford House, Inc.,
52 Vanderbilt Ave.,
New York City 17, N. Y.

Publication Date: April 1, 1947. Postpaid $3.00

Thrill to the Whippoorwill



from Chicago to Evansville



Gleaming bright air-conditioned cars with broad picture windows and soft reclining seats. Anywhere you sit you'll enjoy *Lounge-Car Comfort...* **at no extra fare.**

Roomy diagonal diner welcomes you with tempting foods prepared from an immaculate kitchen . . . at modest prices your budget will welcome.

C&EI's fast, Diesel-powered Whippoorwill Chicago-liner makes daily round-trip between Chicago and Evansville, Indiana.

TRAIN NO. 3 (Read Down) SOUTHBOUND		TRAIN NO. 4 (Read Up) NORTHBOUND
5:20 pm	Lv Chicago	Ar 11:39 am
5:34 pm	Lv Englewood	Ar 11:44 am
5:57 pm	Lv Chicago Heights	Lv 11:22 am
A 6:40 pm	Lv Watseka, Ill.	B Lv 10:37 am
6:50 pm	Lv Milford, Ill.	Lv 10:28 am
7:00 pm	Lv Hoopeston, Ill.	Lv 10:17 am
7:28 pm	Lv Danville, Ill.	Lv 9:55 am
8:28 pm	Lv Terre Haute, Ind.	Lv 8:55 am
8:52 pm	Lv Sullivan, Ind.	Lv 8:28 am
9:22 pm	Lv Vincennes, Ind.	Lv 7:56 am
9:55 pm	Lv Princeton, Ind.	Lv 7:24 am
10:30 pm	Ar Evansville, Ind.	Lv 6:50 am

A—Stops to pick up revenue passengers destined Terre Haute and south.

B—Stops to discharge revenue passengers from Terre Haute and stations south of Terre Haute.

Cozy Smoking Lounges are completely equipped with latest, up-to-the-minute toilet facilities . . . individual deep-cushioned chairs for smoking and chatting.

TAKE THE WHIPPOORWILL FOR AN EXCITING 310-MINUTE THRILL BETWEEN CHICAGO AND EVANSVILLE!

CHICAGO & EASTERN ILLINOIS *railroad*

The Chicago Line

CAN YOU NAME

THIS FAMOUS TRAIN?

It runs between St. Louis . . . and Tulsa and Oklahoma City. Soon to be streamlined—the last word in modern Diesel luxury trains!

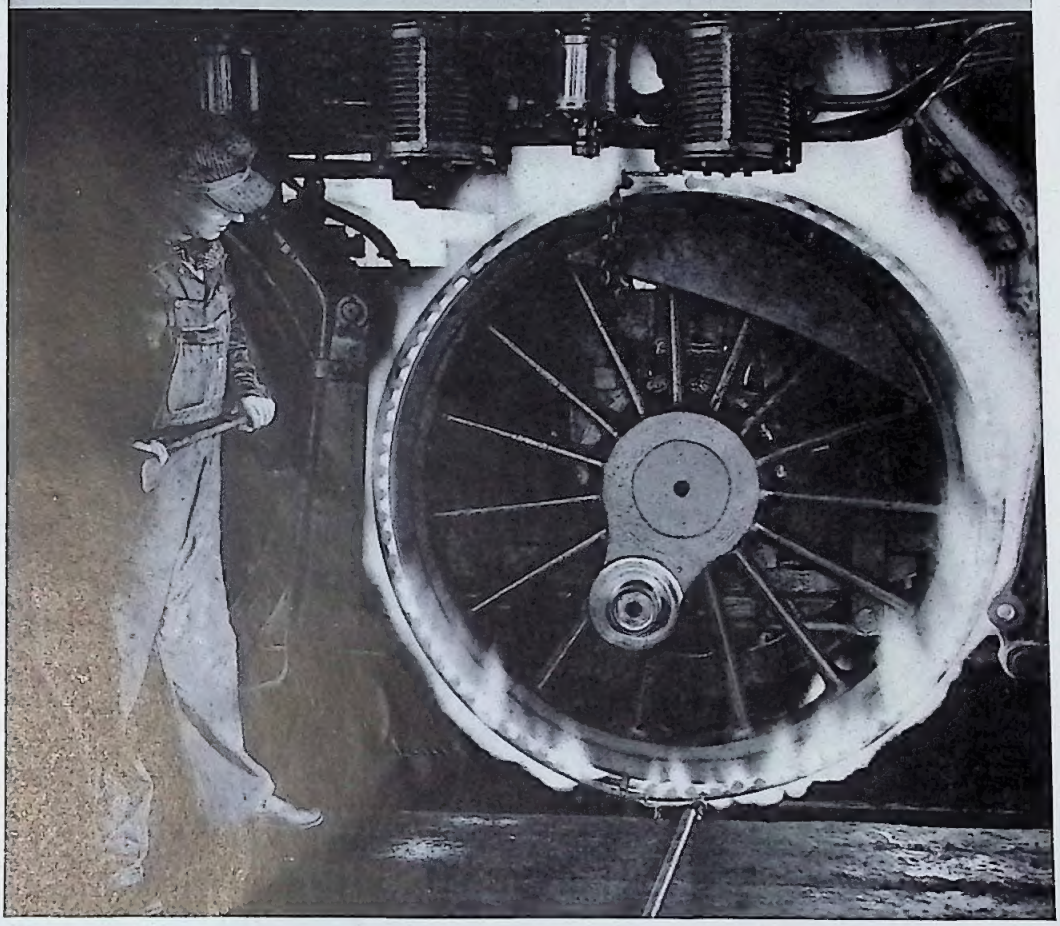
It now provides thru sleeper service between New York, Washington, D. C., and Oklahoma. No changeovers! No delays!

It's famous for fine food . . . and friendly service. It's so quiet, smooth riding. You'll feel fresh and rested after your trip!

IT'S FRISCO'S FAMOUS METEOR

Fast, Friendly Frisco

CHANGING A TIRE *to Serve You*



Hard-working locomotive drive wheels have tires, too . . . rings of tough steel. Changing one is no job for a "Sunday driver." It takes heat, mechanical know-how . . . plenty of both. Extreme heat expands the old tire away from the wheel. The new tire is heated to proper expansion and slipped over the same wheel. When this red-hot ring of steel cools in place, it shrinks and makes a perfect fit.

With today's round-the-clock operations at Norfolk and Western roundhouses a tire can be changed in less than an hour. Constant viqilance keeps tires in top condition . . . assuring maximum availability of powerful locomotives to serve you.

Your shipments move safely and swiftly over Norfolk and Western rails, from the Midwest to the Port of Norfolk and between the North and the South. Well-built, expertly maintained coal burning locomotives are a big factor in providing "Precision Transportation".

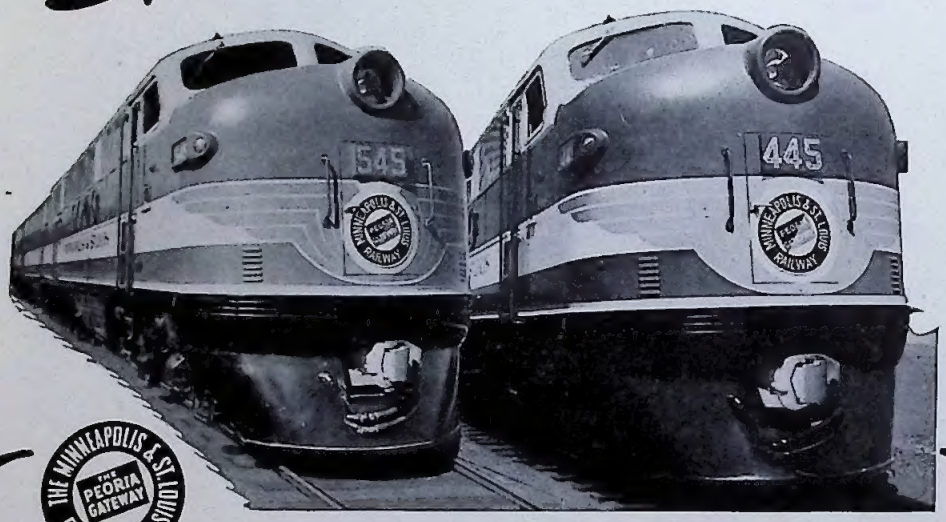
N. & W. traffic specialists are located in cities throughout the nation. Their job is to help you with rates, routes and schedules. Call on them. They have the know-how. It's their job . . . *to Serve You.*

Norfolk and Western RAILWAY

PRECISION TRANSPORTATION

A BRIDGE LINE THAT

Speeds Freight!



THE MINNEAPOLIS & ST. LOUIS RAILWAY CO. — THE PEORIA GATEWAY

FOR THREE-QUARTERS OF A CENTURY,

The Minneapolis & St. Louis *Railway*

has contributed to the Progress and Prosperity of The Midwest by providing Fast, Dependable Freight Service for its Agriculture and Industry.

In addition, the M. & St. L. serves Shippers and Receivers of Freight in all parts of the country by operating as an essential

Bridge Line

through strategic connections, in Illinois, Minnesota, Iowa and South Dakota, with both Eastern and Western Railways.

Another big new Diesel Locomotive, like those in the picture, is now at work on the M. & St. L., helping move Transcontinental Freight faster

Via Important Connecting Line Gateways

The Minneapolis & St. Louis *Railway*

TRAFFIC OFFICES IN 36 KEY CITIES

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